THE AMERICAN
GAS LIGHT JOURNAL

VOL. XCV., No. 26. NEW YORK, DECEMBER 25, 1911. WHOLE NO. 1,907.

CONTENTS.

An Asterisk (*) Denotes an Illustrated Article.

Useful Tables for the Distribution Division, by Mr. W. H. Matlack..... 401

Proceedings, Sixth Annual Meeting, American Gas Institute—Continued from Page 390..... 401

First Day, Afternoon Session—*Commercial Motor Delivery: Cost and Results, by Mr. L. R. Dutton.

Proceedings, Seventh Annual Convention, National Commercial Gas Association—Continued from Page 397..... 404

Second Day, Morning Session—Discussion on Elcock Paper—Practical Demonstration by Mrs. Anna A. Carroll—Discussion—Third Day, Morning Session—Concluding the Discussion, Carroll Paper—*Manufacturing Gas Mantles from Artificial Fibers, by Mr. S. Gulbrandsen.

EDITORIALS—

Briefly Told..... 408

Obituary Note, Mr. Freeman C. Sherman—Annual Meeting, Society of Gas Lighting—Graduate Course, Highway Engineering, Columbia University—December Meeting, Illuminating Engineering Society, Philadelphia Section—December Meeting, Boston Section, National Commercial Gas Association—Current Mention.

ITEMS OF INTEREST FROM VARIOUS LOCALITIES..... 414

Proposals for Valves—Mark Your Protruding Pipes—Wedding Bells, San Francisco—The Public Service Commission, New York, Will Examine Candidates for Assistant Inspectorship Pennsylvania "Grit"—Bond Issue, Northern Westchester (N. Y.) Company—An Appeal to the Commission—Personal—Mr. Learned Adds to the Meriden Plant—Mr. Goodman will Continue to Operate at Hamilton, O.—Death of Mr. E. J. Powers—Betterments at Racine, Wis.—The 8-Hour Schedule, Lynn, Mass.—Death of Mr. Nicholas Canny—Death of Mr. A. L. Chew—Personal—And Another One—Something from Boise, Idaho And Other Items.

The Market for Gas Securities..... 416

Meeting Times of the Various Gas Associations..... 416

Public Lighting Table for January, 1912 (Advertising Section).... 27

Useful Tables for the Distribution Division.

By MR. W. H. MATLACK, East St. Louis, Ills.

These tables have been prepared with a view to their usefulness for speedy determinings in the instance of preparatory (or even final) estimates respecting certain phases of distribution work. They have been calculated carefully by the author, and stood him often in good stead:

TABLE SHOWING COSTS OF LABOR AND MATERIAL ON CERTAIN SIZES OF CAST IRON PIPE.

In the following table is given a summary of "Costs" of 4-inch, 6-inch and 10-inch cast iron gas mains, the figures being derived from 45 different jobs, as follows: Thirty-three of 4-inch; ten of 6-inch; two of 10-inch. The wages rates were: Foreman, $2.75; caulkers, $2.50; laborers, $1.75, for 10 hours.

Size, Inches.	4.	6.	10.
Average cost per foot, labor	.1110	.1477	.1751
" " " material	.3110	.4487	.8211
" " " sundries	.0031	.0063	.0076
" " " haul	.0127	.0167	.0246
Total average cost per foot	.4378	.7184	1.0284
Feet run	18,518	8,906	6,213
Cost yarn per foot run	.0026	.0035	.0044
" per joint made	.0028	.0036	.0048
Cost cement per foot run	.0017	.0017	.0029
" per joint made	.0018	.0018	.0032
Total joints made	1,736	872	572

[CONTINUED FROM PAGE 390.]

PROCEEDINGS, SIXTH ANNUAL MEETING, AMERICAN GAS INSTITUTE.

HELD IN ST. LOUIS, MO., OCTOBER 18 TO 20, 1911.

FIRST DAY—AFTERNOON SESSION.

The President now introduced Mr. L. R. Dutton (Wyncote, Pa.), who read the following paper on

COMMERCIAL MOTOR DELIVERY: COST AND RESULTS.

It was the original intention to present in this paper only the purposes for which motor delivery is being used and the cost of such service to the gas industry. With this thought in view a series of questions were prepared on a sheet upon which replies could be made. These were mailed some months ago to about 200 companies. The prompt, hearty responses, both from users and non-users, indicated an unusual amount of interest. The subject is evidently one of concern to the operators of gas properties.

TABLE SHOWING WIDTH OF TRENCH AND CUBIC YARDS OF EXCAVATION FOR DIFFERENT SIZES OF CAST IRON PIPE.

Size of pipe, inches	4	6	8	10	12	16	18	20	24	30	36	42	48	54	60
Width of trench where no bracing is used, inches.	18	18	20	20	22	22	24	30	38	48	54	60	66	68	72
Cubic feet per lineal foot, 1 foot deep	1½	1½	1½	1.67	1.68	1.84	1.85	2	2½	3.17	4	4½	5	5½	6.0
Width of trench when 2-inch parallel bracing is used, inches	18	18	20	20	24	28	28	30	37	44	54	60	66	72	78
Cubic feet per lineal foot, 1 foot deep	1½	1½	1.67	1.67	2	2.34	2.34	2½	3.10	3.67	4½	5	5½	6	6½
Width of trench when vertical sheathing is used, inches	22	24	30	32	34	40	40	44	47	56	66	72	80	86	96
Cubic feet per lineal foot, 1 foot deep	1.84	2	2½	2.67	2.83	3.34	3.34	3.67	3.92	4.67	5½	6	6.67	7.17	8

TABLE SHOWING SIZE OF BLOCKS AND WEDGES USED IN LAYING CAST IRON PIPE.

Size of Pipe, Inches	4	6	8	10	12	16	18	20	24	30	36	42	48	54	60
Size of Block, Inches	2x6x12	2x6x17	2x6x14	2x6x 4	2x12x18	2x12x18	2x12x18	3x12x20	3x12x24	3x12x30	2x12x36	2x12x42	2x12x48	2x12x54	2x12x60
SIZE OF WEDGE A	2	2	2	2	3	3	3	3	3	3	3	4	4	4	4
B	2	2	4	4	4	4	4	4	4	4	4	4	4	4	4
C	4	4	4	4	6	6	6	6	10	10	10	10	12	12	12

The replies indicated that many were satisfied with the costs obtained; many had kept no detailed costs of operation; others had used cars only a short while; but the desire was general to know what results were being obtained. Most of the information usually found on the subject, seems to be reports submitted by manufacturers on selected cars, or accounts published of remarkable results obtained from so-called "reliability runs," of a few days' duration. The demand is for reliable information based on the operation of motor vehicles performing ordinary daily servi ce day after day and year after year.

Very few companies had given the matter of detail costs enough consideration to prepare forms on which to keep daily or monthly records of costs of operation. Samples of record sheets, which seem to meet the needs for records of horse, electric, or gasoline motor driven vehicles, are shown in Figs. 1, 2, 3. Owing to the desire ex-

DAILY TRUCK AND TEAM REPORT

NO._____ WYNCOTE, PA._____ 191_

GAS WORK			ELECTRIC WORK		
	No. of Jobs	Hours	Hours	No. of Jobs	
IDLE					IDLE
NEW SERVICE					NEW SERVICE
EXP. STORE ROOM					EXP. STORE ROOM
AUTH. NO.					AUTH. NO.
SET AND REMOVE METERS					CONSUMER'S INSTALLATION
GAS FIXTURES					SET AND REMOVE METERS
HOUSE PIPING					MAINTENANCE MAINS
GAS APPLIANCES					HOUSE WIRING
NEW WORK FREE					FIXTURES AND APPLIANCES
GRATUITOUS WORK					MAINT. DISTR. CONDUCTORS
COMPLAINT EXPENSE					MAINT. SERVICES

ODOMETER READING FINISH_____

ODOMETER READING START_____

MILEAGE_____

GASOLINE USED____GALLONS_____

OIL USED____PINTS_____

TIRES	R.F.	L.F.	R.H.	L.H.

WERE TIRES OR TUBES OLD OR NEW _____

REPAIRS

REMARKS

_____DRIVER

APPROVED_____

Fig. 1.—The form of daily report illustrated, combines the essential points of reports submitted by several companies.

pressed in many of the replies by the companies, it seems wise to broaden the scope of the paper and give some facts relative to the growth of the motor industry and its relation to modern transportation. After presenting some costs of operation of the various sizes and types of vehicles, we will discuss some of the problems involved in the adoption of motor delivery, then present some conclusions with reference to finding the truck you need.

As expressed by a recent writer on this subject, "We are living in an age of rapid advancement. Yesterday's methods and facilities prove inadquate for present day needs. Antiquated systems must go, if we in the commercial world are to be kept abreast of the times and make money. Up-to-date methods of salemanship and modern merchandising are the necesaary and inseparable adjuncts of success in the present day commercial world.

"In order to realize its greatest efficiency each department of any organization must be operated according to some producing standard. The time has arrived when the 'up-to date' merchant must give due consideration to commercial car service. He who still hesitates to employ light delivery cars should not overlook the actual fact that his competitor has proven conclusively the benefits of the motor vehicle."

The advent of the motor car in the commercial world has been so gradual that few persons can remember just when they saw the first one, but the fact that pleasure car makers are hurrying into the field

AMERICAN GAS COMPANY

By the Philadelphia Suburban Gas & Electric Co. Company

Automobile, Autotruck or Motorcycle report for month of July 1911.

Make License # 622 Number 42343 Horse Power 30 Number of Cylinders 4

Number of Seats 4 Weight 2600 Size of Tires 34" X 4"

DATE	MILES RUN DAILY	GASOLINE GALS	GASOLINE COST	OIL QTS	OIL COST	GARAGE	TIRES	Company's Repairs HRS	Company's Repairs COSTS	OTHER REPAIRS AND EXPENSES	TOLLS	SUNDRIES	TOTAL EXPENSES $	¢
1	87	Full		2										
2	53													
3	67	4												
4	90			1										
5	10	3												
6	20													
7	21	4												
8	25	2												
9	78	6		1										
10	31													
11	80	6												
12	17													
13	18	3												
14	52	5								Batteries			1	10
15	30	1		1										
16	40	8												
17	55													
18	41	4		1										
19	41	4								Repairs to Wind Shield			1	10
20	20	4												
21	30													
22	50	4												
23	10													
24	58	6		1										
25	12						Repair cut							
26	14	2					3 00						3	00
27	10													
28	34	4												
29	10			1/2										
30	11	3												
31	22													
		73	693	7-1/2	94								7	87
Total	1129												15	07

No. gals. gasoline on hand first of month 10

No. gals. gasoline purchased during month 68

Total 78

No. gals. gasoline used during month 73

Balance on hand 5

Extra tires on hand 1

Extra tubes on hand 3

Cyclometer reading first of month 185

Cyclometer reading last of month 1314

Total miles run during month 1129

Average Cost per mile .01 2/10

Aver. No. miles per gal. gasoline 15 4/10

L. R. D.

Driver.

Approved_____ Supt.

It is important that an accurate record of all expenses be kept and all items entered in the proper places.

Fig. 2.—Monthly Summary Sheet of Expenses of Operating Each Car or Motor Cycle.

is convincing proof that the motor truck has prov en its efficiency and economy in displacing the horse drawn-vehicle. Recent statistics of the Department of Commerce and Labor throw some interesting light on the growth of the industry, although the years shown are only from 1899 to 1909 inclusive.

In 1899 there were 57 auto manufacturers; in 1909 (10 years later) there were 316, or a gain of 454 per cent. It is interesting to note the comparative increase of gasoline electric, and steam vehicles manufactured in the last 5 years. These show that from 1904 to 1909:

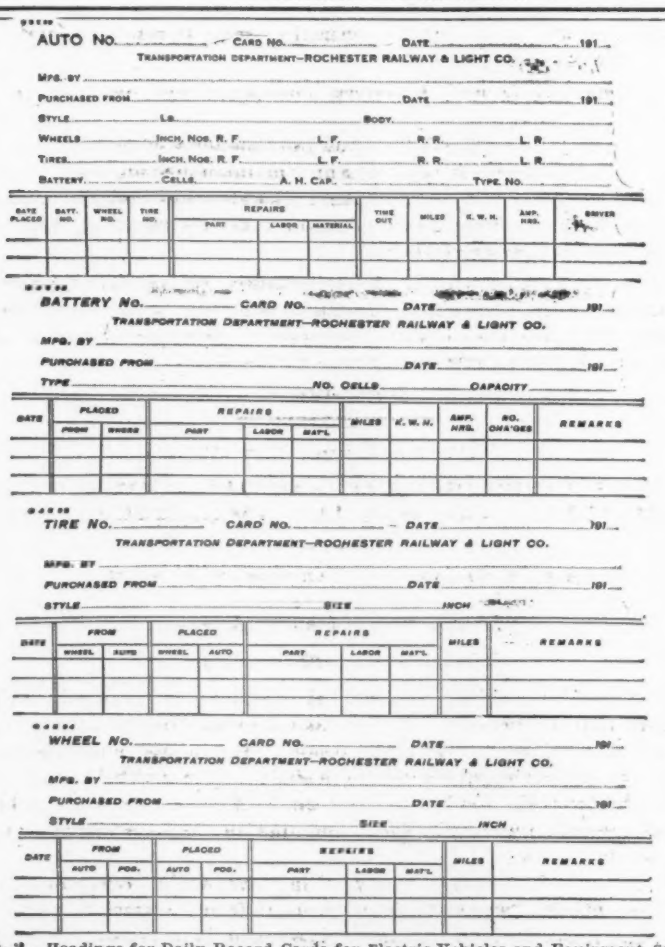
	Per Cent.
Gasoline machines increased	658
Electric machines increased	163
Steam machines increased	106

If these statistics could be carried into the present year they would show a greater increase in gasoline and electric machines, but a decrease in steam. With this increase in the manufacture and use of motor cars it is interesting to note a recent report of the Department of Agriculture, which states that in 1900 there were 15,000,000 horses in the country, while last year there were 24,000,000, or a little over 50 per cent. increase. The possibilities of the future of the motor-driven vehicle may be realized from the fact that there are about 7,000,000 horse drawn vehicles which cou ld be displaced by motor vehicles of the types made to-day.

During the hot weather of July this year, figures from the health departments of several large cities show an amazing loss through the death of horses.

New York reported	1,708
Boston, Mass., reported	210
Chicago, Ills., reported	1,483
Philadelphia, Pa., reported	351
Total	3,752

This represents an investment of nearly one million dollars in only four cities.



AUTO No. ..... CARD No. ..... DATE ..... 191..
TRANSPORTATION DEPARTMENT—ROCHESTER RAILWAY & LIGHT CO.
MFG. BY .....
PURCHASED FROM ..... DATE ..... 191..
STYLE ..... LB. ..... BODY .....
WHEELS ..... INCH, NOS. R. F. ..... L. F. ..... R. R. ..... L. R. .....
TIRES ..... INCH. NOS. R. F. ..... L. F. ..... R. R. ..... L. R. .....
BATTERY ..... CELLS ..... A. H. CAP. ..... TYPE. NO. .....

DATE PLACED	BATT. NO.	WHEEL NO.	TIRE NO.	REPAIRS: PART	REPAIRS: LABOR	REPAIRS: MATERIAL	TIME OUT	MILES	K. W. H.	AMP. HRS.	DRIVER

BATTERY No. ..... CARD NO. ..... DATE ..... 191..
TRANSPORTATION DEPARTMENT—ROCHESTER RAILWAY & LIGHT CO.
MFG. BY .....
PURCHASED FROM ..... DATE ..... 191..
TYPE ..... NO. CELLS ..... CAPACITY .....

DATE	PLACED: FROM	PLACED: WHERE	REPAIRS: PART	REPAIRS: LABOR	REPAIRS: MAT'L.	MILES	K. W. H.	AMP. HRS.	NO. CHARGES	REMARKS

TIRE No. ..... CARD NO. ..... DATE ..... 191..
TRANSPORTATION DEPARTMENT—ROCHESTER RAILWAY & LIGHT CO.
MFG. BY .....
PURCHASED FROM ..... DATE ..... 191..
STYLE ..... SIZE ..... INCH

DATE	FROM: WHEEL	FROM: RIM	PLACED: WHEEL	PLACED: AUTO	REPAIRS: PART	REPAIRS: LABOR	REPAIRS: MAT'L.	MILES	REMARKS

WHEEL No. ..... CARD NO. ..... DATE ..... 191..
TRANSPORTATION DEPARTMENT—ROCHESTER RAILWAY & LIGHT CO.
MFG. BY .....
PURCHASED FROM ..... DATE ..... 191..
STYLE ..... SIZE ..... INCH

DATE	FROM: AUTO	FROM: POS.	PLACED: AUTO	PLACED: POS.	REPAIRS: PART	REPAIRS: LABOR	REPAIRS: MAT'L.	MILES	REMARKS

Fig. 3.—Headings for Daily Record Cards for Electric Vehicles and Equipment, Submitted by a Company with a Fleet of "Electrics."

The man with the motor truck had the best of it during the hot weather. In fact the superiority of the motor-driven vehicle over the horse-propelled vehicle is manifest at all times. In the heat of summer or the snow and ice of winter, the motor truck does not weary, but easily ploughs through the snow or travels the highways regardless of weather conditions. Motor delivery gives promise of solving many of the problems involved in the present-day wasteful methods of transferring merchandise on long hauls by horse-drawn vehicles.

It is worthy of note that the motor truck takes but half the space to store, as that taken by horses and wagons to perform the same service—that the truck will carry twice the load at twice the speed, using half the space; thus increasing the area of a densely populated city street, six times.

Specifications of Commercial Vehicles Being Manufactured, January 1, 1911.—The growth of the commercial gasoline car industry can be judged from the fact that, January 1, 1911, a specification chart published by one of the leading motor car journals, tabulating the cars being offered for commercial purposes, showed 220 different models being manufactured. There were 111 firms engaged in manufacturing or assembling the cars located in various parts of the country as follows:

Ohio, 20; New York, 17; Michigan, 17; Pennsylvania, 11; Illinois, 10; Minnesota, 7; Indiana, 6; Wisconsin, 7; Massachusetts, 5; Missouri, 3; Scattering, 8; total, 111.

Of the various models being offered, the following data relates to the carrying capacity of the trucks: Under 1 ton, 71; 1 ton, 36; 1½ tons, 20; 2 tons, 32; 3 tons, 29; 4 tons, 9; 5 tons, 16; 7 tons, 3; 8 tons, 1; 10 tons, 3; total, 220.

Some of the cars listed above are Taxi-Cabs or passenger coaches, and they, with the trucks, average in cost, complete with body, according to carrying capacity: Under 1 ton, $750 to $1,200; 1 ton, $1,250 to $1,500; 1½ tons, $1,500 to $2,000; 2 tons, $2,000 to $2,750; 3 tons, $3,000 to $3,750; 5 tons, $4,000 to $5,000; 7 to 10 tons, $6,000 to $10,000.

Various styles of drives are listed, such as chain, 154; shaft, 31; friction, 9; miscellaneous, 26.

Various styles of transmission are in use: Sliding gear, 130; planetary gear, 60; friction gear, 25; individual clutch gear, 5.

Cooling systems in use are: Water cooled, 194; air cooled, 26.

Two types of engines are employed: 4-cycle engine, 200; 2-cycle engine, 20.

The 2-cycle engines are used for all size models: 2-cycle engine under 1 ton, 9; 2-cycle engine 1 ton, 4; 2-cycle engine 1½ tons, 2; 2-cycle engine 2 tons, 3; 2-cycle engine 3 tons, 2.

With the 2-cycle engine the number cylinders vary: 1 cylinder, 1; 2 cylinder, 10; 3 cylinder, 6; 4 cylinder, 3.

Of the 4-cycle type engine the following is shown: 2 cylinders, horizontal opposed, 67; 4 cylinders, upright, 128; 6 cylinders, upright, 5.

The speeds at which the various models may be operated seem to vary according to the carrying capacity; Trucks of 1 ton and under, 15 to 30 miles per hour; trucks from 1 to 3 tons, 12 to 20 miles per hour; trucks from 3 to 10 tons, 8 to 15 miles per hour.

Since the above specification was prepared, the entries in a motor truck parade in Philadelphia in June, and a truck "run" in Chicago in August, show 33 new trucks not listed above, in commercial use.

Specification of Motor Cycles being Manufactured, January 1, 1911.—Number of motor cycle manufacturers, 28; total number of models, 54, thus apportioned as to horse power, etc.: One 2½-horse power; one, 2¾; one, 3; one, 3½; twenty-four, 4; four, 4½; seven, 5; four. 6; one, 6½; eight, 7; unclassified, 2; chain driven, 9; belt drive, 39; shaft drive, 4; unclassified, 2; equipped with free engine, 41; not so equipped, 13; equipped with 2 speeds forward, 18.

Three Wheel Vans.—Number of 3-wheeled vans manufactured, 5; total number of models, 5: Description—One 6-horse power model; one 7-horse; one 8 horse; one 10.4-horse; one 14-horse; chain drive, 5; models equipped with 2 speeds forward, 5.

The statistics obtained from 115 gas companies in 30 States show 909 motor vehicles in use, August, 1911, thus:

	Companies Reporting.		Companies Reporting
Alabama	2	Missouri	1
California	2	New Jersey	5
Colorado	2	New Hampshire	1
Connecticut	4	New York	21
Delaware	2	North Dakota	1
Georgia	2	Ohio	4
Illinois	8	Pennsylvania	14
Indiana	7	Rhode Island	1
Iowa	2	Tennessee	2
Kentucky	2	Texas	3
Maine	2	Utah	1
Maryland	1	Vermont	1
Massachusetts	10	Washington	3
Michigan	6	Wisconsin	2
Minnesota	3		
Total			115

The following is a list of motor vehicles reported: Motor cycles and 3 wheel vans, 379; gasoline motor cars and runabouts, 321; electric runabouts, 11; gasoline trucks, 94; electric trucks, 104; total, 909.

Progressive Age, for Sept., 1910, and Feby., 1911, published a list of gas companies using motor delivery at that time. Illustrations of the various equipments used were included in the articles on the subject.

The List of Questions Sent out Brought Replies from About 50 *Companies, Respecting Information for Paper on "Motor Delivery."*—Kind of car (gas or electric) and maker? Touring, runabout or truck? Rated load capacity?

	12 m.	20 m.	30 m.	40 m.	50 m.	60 m.
Average miles run daily	3	11	27	7	2	2

	0 Per Ct.	10 Per Ct.	15 Per Ct.	20 Per Ct.	25 Per Ct.	33⅓ Per Ct.	50 Per Ct
Annual percentage depreciation, gasoline	5	1	21	7	5	9	3

Annual percentage depreciation, electric....From 0 per ct. to 10 per ct.

	Yes.	No.
Do you carry fire insurance	31	4
Do you carry accident insurance	26	7
Is car driven by workmen	9	..
Is car driven by experienced drivers	40	..

	9c.	10c.	11c.	12c.	15c.	18c.
Cost per gallon, gasoline, your city?	3	6	7	1	6	1

	20c.	25c.	30c.	35c.	50c.
Cost per gallon, lubricating oil	1	1	4	7	8

	4	5	6	8	10	12	15
Average miles per gal., gasoline	6	8	7	12	6	5	6

	30	40	50	80	100	150	200	500
Av. miles per gal., lubricating oil	1	3	1	10	8	9	6	2

Tire repairs, estimated for year.

Other motor repairs, estimated per year.

	0 Per Ct.	5 Per Ct.	10 Per Ct.	20 Per Ct.
Time out of service for repairs	3	11	21	2

Have you any comparative figures with horse equipments?
Have you form for keeping daily record?
Do you want this report considered confidential?
What do you consider the *strongest* and *weakest* points in motor delivery?

Strong Points.

Long hauls possible in hot weather	8
Quick service on regular work and emergency calls	25
Does two times work of one horse	1
Cheaper and more reliable	9

Weak Points.

None	3
High maintenance cost	14
Breakdowns and out commission	3
High tire costs	1
Inexperienced drivers	17

Motor Cycles.—While there were more motor cycles reported than other vehicles, only 5 companies have furnished data sufficiently complete to compile costs. These reports cover 92 two-wheel machines and 16 three-wheel vans, and will be sufficient to arrive at an average cost.

	14 Machines Per Mile.	55 Machines Per Mile.	5 Machines Per Mile.	4 Machines Per Mile.	14 Machines Per Mile.
Gasoline	0.0016	0.003	0.004	Items not classified.	Not classified.
Oil	0.0020	0.002	0.002		
Tires	0.0012	0.001	0.002		
Repairs	0.0092	0.006	0.003		
Depreciation and maintenance	0.0091	0.022	0.016		
Total	0.0231	0.034	0.022	0.02½	0.0505
Aver. miles per annum.	6,000 each.	3,000 each.	3,000 each.	7,000 each.	3,250 each.

Three Wheel Vans.

	15 Machines.	1 Machine.
Gasoline	0.003	0.0020
Oil	0.002	0.0016
Tires	0.003	0.0100
Repairs	0.006	0.0120
Depreciation and maintenance	0.026	0.0140
Total	0.040	0.0396
Average miles per annum	3,000 each	2 years 12,500

Fig. 4.—Illustrating a new type of 3-wheel van Higher horse power than the motor cycle, and arranged for more comfort and ease for the operator.

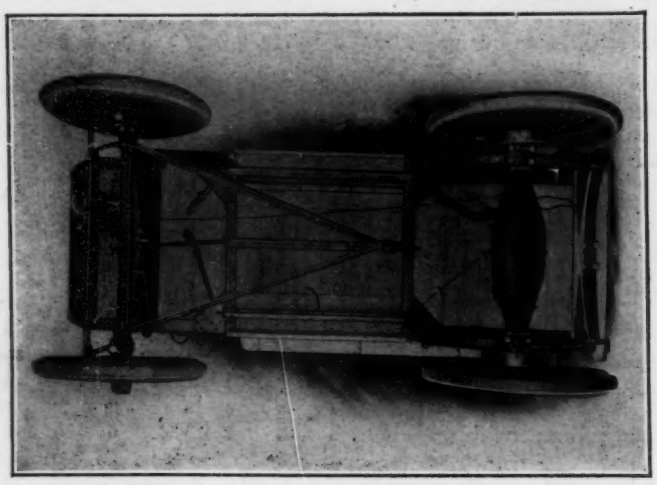


Fig. 5.—This cut of the chassis of an electric truck illustrates the power plant, differential and gears inclosed in the rear axle and rear wheels. All moving parts are dirt proof and easily accessible.

The information secured from the various gas and electric companies, as well as the cost of operating seem to resolve themselves into five classifications:

1. Touring cars used by officers, managers and heads of departments.
2. Electric trucks for delivery and maintenance purposes.
3. Gasoline trucks for delivery and maintenance purposes.
4. Three wheel vans used by lamp inspectors and complaint men.
5. Motor cycles used by superintendents of distribution, inspectors and complaint men as follows:

Fitters' emergency calls; fitters' attention to complaints; paving inspectors; vault inspectors; inspectors of house fitting department; inspectors of service and main department; timekeeper; turn-on and turn-off; scattered meter readings; collectors.

(To be Continued.)

[Continued from Page 397.]

PROCEEDINGS, SEVENTH ANNUAL CONVENTION, NATIONAL COMMERCIAL GAS ASSOCIATION.

Held in Denver, Col., October 24 to 28, 1911.

Second Day—Morning Session.

Discussion on the Elcock Paper.

The President said they had listened to a splendid paper deserving considerable discussion. However, as time was limited he would request those taking part to do so briefly. He further suggested that remarks be confined absolutely to the point. If permitted to call time when one exceeds 3 minutes, they would have opportunity to hear from a goodly number in short time, making the discussions quite interesting.

Mr. Hare said a point in advertising over which every one held varying opinion, was as to the value of differing classes of advertising, and the order in which these classes should be placed. It would be of great value to everybo dy present if, as rapidly as possible, men from different cities would state in what order they placed different classes of advertising. The three different classes they should like to have placed in order would be: Personal representation by salesmen, circularizing, and newspaper advertising. How these were ranked by men in different parts of this country.

Mr. Kelsey—The experience in Milwaukee lead them to believe in just in the order Mr. Hare made, namely: Personal representation directly, circularizing and newspaper advertising. Looking over the proposition, the one thing he wanted to speak of very briefly was the matter of newspaper advertising for the gas company. Mr. Brock told them yesterday that with many of the companies the best excuse for buying space in the newspapers was they had been protected from attacks of the newspapers through purchasing space. That attitude exists to a large extent, still they were at the stage where they didn't know whether newspaper advertising paid and have to take it on faith. In the light of recent developments public service advertising in the public prints would be reduced within the next few years, to a like certainty of response as department store advertising. It was yet in its infancy, and since only a scant 7 years were behind them in the way of experience, should they say the problem was not capable of solution. They wished to reach their customers many times in a year, and they agreed that the newspaper presented the most logical means for doing it. First the publisher must be with you, and to have this many will have to reform their general managers. For instance, suppose a sleek individual comes into the office about the first of October with a prospectus of the beautiful New Year's edition—the rest of the story they all know so well. Well, take him into your confidence, tell him how you hope sometime to be able to determine just how much ground there is for the faith that is in you that newspaper advertising pays; that his paper can't afford to do anything other than to nurse your account; just as it would any retail account, that when he can show in black-and-white results from space used in his paper, more copy and more business would follow, that public service advertising was but in its infancy, that if he got a bunch of easy money at inflated rates the first of each year he was simply robbing himself. While he won't see things that way, being a special man, with commissions in sight, the general manager, seeing things from the broad policy standpoint, will naturally enough be appealed to by the special man's talk, till he shows him how easily he could cripple the efficiency of the new business appropriation by this pointless expenditure, and how, realizing in its full the tremend-

ous possibilities in this new trend of public service advertising, the publisher will be glad to co-operate. Newspapers were run to-day for legitimate revenue, and seeing publishers were now offering service, as well as space, from their own best interests in this "show me" trend, they will co-operate; and they do co-operate. When using this newspaper space, suppose in bringing out a new appliance, or wishing to feature a specialty not theretofore touched, why not get a line on the response, say from one paper alone. Tabulate the orders from personal calls, telephone, post cards and letters. Not by doing this sort of thing 1, 2 or 12 times would they get the information sought, but gradually, with reports before them they would be able to tell, beyond peradventure, where newspaper advertising brought a response and where it did not. As Mr. Elcock said, companies that used space regularly for a diary of interesting facts found the plan was most valuable, but up to a certain point only, for there was a boomerang there. If they gave a little Sunday School talk everyday, they were making many promises before the year's end. It had to be a more perfect organization than he had thus far seen to make good on every promise; what with a fitter recovering from a bender, a complaint man who ate a lobster "a la newburg" the night before; green maintenance man—why a 101 things crept in, preach and supervise as they might. So, let them not make too many promises to the public, but be prepared to make good every part of every promise made. Shall they be fair with the newspapers. They say to the reporter the general manager's door is always open. Is it? Has anyone ever had a confidence betrayed? True, they often were misquoted, but not intentionally. The young chap who noted that interview was racing with the clock to be on hand with his stuff for the next edition. Find out what he wanted, then give him a typewritten statement. If that fails to be what he wants they would hear from him, yet he would much rather have that than not. He was simply pointing out that many of them did not get the right attitude toward the newspaper; and until they did so they could not use the advertising columns of a paper with the certainty of response they did get from other mediums, nor could the relations exist that can exist and that should exist. [Applause.]

Mr. Ganser said many men connected with small gas companies often told him they could never trace any direct results to advertising. The reason therefor, he thought, was they do not keep solicitors familiar with the character of advertising that was taking place daily. No solicitor should be sent to a home without knowing what had been advertised the day before, or in the event of morning editions, the advertising for that morning. Where pamphlet or booklet advertising was used a copy should be in his possession at all times. Attention should be called to this advertising, in which manner one will educate the reader to keep in close touch with newspaper advertisements. Otherwise they would simply be doing that which the prior speaker referred to, pacifying the newspaper without gaining any positive results. As to the advertiser. He noticed often of late that no reference whatever was made to oil light illumination. And it was a mistake, for they would find in many living rooms, libraries and sitting rooms the big Rochester oil lamp, which it may not be denied gives a comfortable and pleasing light. As soon as they eliminated that light from the most important room in the household, then they were ready to do business in the rest of the house—not before. So soon as they managed to have the care of the big lamp in the rooms mentioned, at that time would the oil lamp disappear in the rest of the household, and not before. They all seemed to overlook oil lamp illumination. People, particularly those of 50 to 55 years, tell you they cannot read with a Welsbach or any other incandescent burner; that it is too brilliant; that the oil lamp light is cheaper, softer and mellower. It was up to them to teach these people of older years that better light could be gotten from the incandescent burner.

Mr. Gardner, referring to Mr. Hare's question as to the relative value of newspaper advertising, special printed matter and personal representation, said their relative value depended entirely on the results sought to be accomplished. If, say, having a matter of public relation in hand, where one wished to educate the general feeling of understanding of all the citizens of a community to comprehend the proposition properly, he would lay great emphasis on newspaper advertising. If, on the other hand, it were a question of selling a specific piece of apparatus, the way of the solicitor might be prepared by special printed matter, sent to properly selected lists, followed by personal calls. That it may be helped, kept alive and continued before the eyes of prospects who had not been visited as yet, although they had received printed matter by some incidental newspaper advertising. Again, personal calls, very often considered the most important and best kind of advertising, might be entirely futile unless the way had been prepared by newspaper advertising or specially printed matter. Hence he did not think they could say newspapers or specially printed matter, or personal representation, or any of them, were the most important. They could not definitely lay down any rule regarding the procedure to be taken. They must consider the purpose to be accomplished, analyze the methods of accomplishing it, and then work up a system of advertising to get the best results in the specific case.

Mr. Gibby thought more or less they were all from Missouri, in that they had to be shown, andthe public was with them along that line. Much of his time in the gas business had been directed to an advertising plan that had not been largely mentioned—display advertising for windows. They had given much effort to that line of advertising in Syracuse and had received good results. They featured something that caused the public to stop, something out of the ordinary and that required originality in providing. He was sure the most important point of the paper brought out there was the local advertising man. It was right perhaps to have one man in a city far removed running such a proposition, but they could not get good actual results, unless they had a man right on the ground to keep their solicitors and other men in touch with the field in co-operation with the advertising scheme. He thought advertising was the main thing for extending the lighting business, and in time to come this would be shown the best field for increasing their business. The point made by a former speaker, and also in the "Bulletin" of to-day, was the necessity to get the men in the field together with the advertiser. He believed the local men in the field should have charge not only of the window display and of the local works, but should be the men to look after this work.

The President said they would like to hear "one minute experiences" from Boston, New York, Baltimore, Spokane, San Francisco and Atlanta. Such a discussion would occupy 10 minutes, then they could listen to the last paper on the afternoon programme. Might they hear from Boston.

Mr. Wrightington thought Mr. Gardner answered Mr. Hare's question with thoroughness. He thought all three elements of advertising were absolutely necessary, the one depending entirely on the proposition one was trying to advance, or entirely on that what you want particularly to do. With them in Boston, it was a fact, no doubt, that newspaper advertising, in the beginning of their campaign, was by far the most important thing that they did. A very serious feeling of antagonism existed against the company, and it was imperative to dissipate that before much progress could be made by their salesmen. [Applause.]

The President invited remarks from New York.

Mr. Korthaus said that in Brooklyn Borough they had done some newspaper advertising which brought fair results, but his belief was that the mailing of pamphlets was really productive of better ones. They proposed to try that in the near future and hoped to get benefit out of it. He believed Mr. Gardner was not far from right in his remarks. They could not specialize on one particular class of advertising, but had to advertise as occasion required.

Mr. Hare thought they should be more specific in that question, even confining it to the sale of appliances or sale of gas, leaving out the question of the value of newspaper advertising or publicity campaign. They should rank the three as selling agents for the greatest quantity of appliances.

Mr. Dodson said that last year, in Baltimore, they had been specializing in their advertising mostly with reference to hospital kitchens. They had succeeded in securing all of the hospitals of Baltimore, which success they felt was due to the stated reasons why gas should be used in such institutions. They were now initiating a campaign on ice plants to be operated by gas engines. They had a number of such in Baltimore, and they knew the field was a large one.

Mr. Coughlin said that in Spokane they had been carrying on an extensive newspaper campaign. They also carried a large commercial department, considering the size of their city. As to Mr. Hare's question regarding the classification that should bring in the most business, he was willing to say direct solicitation or the point of familiarizing the representative with the class of advertising. They had to work their advertising in season. Every morning there an ad. appeared in a newspaper and a copy of it was clipped and pasted on a bulletin board. The representatives' attention was called to it at the morning meeting, at which they were instructed to do certain things and report thereon at 5 P.M., when the day's work was reported for consideration. They have done much in the way of window

advertising, but not so much in the way of pamphlets. One feature suggested that caused great change in the way of public sentiment was brought about by their General Manager, Mr. Cantril, under the direction of the commercial manager, who was always looking out for public sentiment. This suggestion had to do with buying at home, in which the people of Spokane are great believers. In addition to buying at home they believed they should have more manufacturing industries, and a spirited campaign was on foot now headed by the Chamber of Commerce. Mr. Cantril's idea was to offer two windows at the head of the street and allow the buying-at-home league to put up their display, taking as long a time as they saw fit. The Secretary took it up with the Committee who unanimously accepted it. They commenced by writing the manufacturers and other people interested in such a display, with the result that for the last two months they had not had a gas appliance in their window save the lighting furnished for that display; consequently that had done more for them from a sentiment standpoint than anything else.

Mr. Rushin said, unfortunately he did not hear Mr. Elcock's paper read, but he had read it later, and, answering Mr. Hare's question he said soliciting was first, newspaper advertising was second, "stickers" on the gas bills third. Narrating an experience in Atlanta. The first of the year they started a special campaign on candy furnaces, and a month since then they had taken up one appliance at a time specialized on that particular thing for 30 days. Of course, they also sold everything else. On September 1st, they sent out stickers with the gas bills advertising portable lamps. The solicitors knew all about this and were instructed to talk portable lamps to everybody. The result was they sold more portable lamps during the month of September than had been sold in any one year previous thereto in the history of the company. He thought specializing with stickers and newspapers, have the solicitors following close up, yielded he best results. They did do very little advertising concerning light 'n the newspapers. Their advertising consisted of circular letters, stickers on gas bills, pamphlets with instructions to the solicitors to take out electricity in every place they possibly could.

A Member asked if any effort had been made to find out the percentage of gross receipts of a company that should be expended in advertising.

Mr. Elcock said, while he could not answer that question at the present time, a point he wishes to bring out was that it was particularly important to the gas industry in advertising to break down the erroneous thought sent out through the country respecting the vitiation of the air and discoloration by heat through the use of gas. Having the good fortune to remain over in Chicago long enough to get luncheon at one of the prominent places there, I ordered a chop (they had a big installation in the grill room) and thought I would see it beautifully broiled on a gas broiler. Walking towards the cooking division we found it sizzling on an electric broiler. Asking the cook why he did not broil those chops by gas, the reply was, he wouldn't think of it. He could not stand the odor of gas; besides, he would lose all his patrons, for it was unhealthy to use anything that was heated by gas. In Philadelphia a man wishing to heat a sun parlor, went to the electric company and bought 2 electric radiators. He was paying 30 cents an hour for current to run the two radiators when one gas heater would have been sufficient. He said he couldn't possibly think of putting gas in because it would make himself and family ill. In another instance a woman, thinking that gas killed her potted palm, ordered the gas out of her house. These were trifling instances that came up, but one heard about them constantly. They should educate people out of that idea in fairness to themselves. As a member of the Advertising Committee of the National Commercial Gas Association he would put it up very forcibly to his brother members in the conducting of a campaign, to especially set aside practically all advertising in the magazines for a certain length of time to determine if they could not get away from the people certain hygienic fallacies held by them respecting the use of gas.

Mr. O'Donnell said, in discussing Mr. Elcock's paper, it seemed to him that it would be of value to consider that phase of advertising which dealt with the education of salesmen. It was the day of the trained man in business, and there were on all sides opportunities for education not available a few years ago. The fact that the buying public was growing keener and keener and more given to make intelligent comparisons, meant that hap-hazard methods were less liable to succeed than before. A good salesman must not only know his goods, but must be conversant with modern scientific selling principles, and realize that his vocation, being one of honor and dignity, calls for fine play of mind in quite as great a degree as if his sphere were in one of the so-called learned professions. Some seem born with a selling instinct that could be developed naturally, and a few years ago men of that type were the leaders in salesmanship. Their advantage was not questioned; but to-day they know that by persistent study the man of lesser native ability could acquire that tact and methods of the born leader. They had developed to a pretty fine degree the educational tools to carve a finished salesman out of the raw material. That came properly under the head of advertising, which meant simply the giving out of information to make business, and it was as important to give such information to salesmen as the public. Wherefore the work the National Commercial Gas Association was doing was advertising of the best kind; likewise was the work of the local sections. So, too, the work of the salesmanship courses such as that being conducted by the Association. However, one form of education that should take first rank, but which had not been brought to the notice of one of these conventions was what is known among advertising men as the confidential company organ, a newspaper or magazine published for the employees of a company or syndicate for the purpose of cementing their interests, keeping them informed of what was going on in the organization, thus giving to the entire body the advantage of special information of a business or technical nature that might have been developed by any of the individuals. As a unifying influence, there was no substitute for the company organ. Hundreds of publications of that class were in the United States today, and there had been other thousands vanished after a diaphanous existence. It was of all classes of publications perhaps the most difficult to keep alive, for the reason that its continuance depended, not upon entertaining its readers, but upon helping them. As soon as a company observed that its confidential organ was not of real help to its employees, it was discontinued, for the expense incident to its publication was large enough to require actual returns. He had watched with interest the course of numbers of these publications, and had tried to analyze the reasons why so many of them had been unsuccessful. These reasons were chiefly two: A wrong conception on the part of the editors as to what class of reading matter would be most beneficial to the employees, and a lack of interest on the part of the employee in the paper. Upon still closer analysis, he thought the vital reason could be traced to the editor, for if he knew the kind of matter best suited, and employed tact and enterprise in securing it, he could not fail to keep the readers interested. A great mistake usually made was to consider that the company organ should simply furnish agreeable reading matter without regard to its relevancy. This viewpoint lead to the printing of jokes, poems and comic illustrations, which assuredly were entertaining, but which did nothing whatever in the way of drawing the minds of the readers to the aims and efforts of the company, and which did not create a co-operative spirit or give out useful information. In 1910, the United Gas Improvement Company determined to inaugurate a company organ, and before the work of publication was begun much thought was given to the subject. First, the selection of a name was necessary, and "New Business" was chosen because it seemed to describe exactly the purpose of the magazine; namely, to aid in creating new business throughout the Company system, Next, it was determined to print the magazine on good coated paper stock, so that it would not look cheap and would take the finest class of half-tone illustrations. As to the size of the page, 9 by 12 inches was considered best, so the type could be arranged in two columns, making it easier to read, and so that the illustrations could be arranged in attractive make-up. All these things were important, for they were naturally induced to read something that looked good to the eye, and the cost for good paper and printing was not greatly in excess of the cost of poor paper and printing. In selecting a type dress, the rule of simplicity was adhered to. It was also decided to make the cuts as a rule square finish without any border adornments, so there should be nothing to interfere with the educational value of the illustrations. As to the quality of reading matter and the method of securing it, a well defined editorial policy was formed. It was a vital rule that the magazine should not be made up of preachments or mandatory matter handed down from official sources, but that it should be practically edited by the readers themselves, and that they might exercise their preferences as to the class of matter best suited to their needs. In the first issue the readers were informed that they should consider themselves co-editors, and every facility was offered to gain their co-operation. The only matter to be necessarily prepared in the Company's advertising department was one editorial each month, which editorial was not to be a preachment, but a helpful message based upon in-

formation best to be had in the home office. For the rest, an effort would be made to secure from the employees of the Company in various cities articles relating to new or unusual installations; clever salesmanship methods which had resulted in securing orders; descriptions of improvements in the arrangement of offices; descriptions of unique window displays; experiences of salesmen, demonstrators or other new business employees which would contain helpful suggestions for their fellows; and articles explaining in detail how problems of one sort or another were met and overcome. The co-editors were invited to secure photographs or diagrams of installations or other matters treated of in their articles, and were assured of the help of the advertising department in this matter whenever it was required. Also, the fact was taken into consideration that not all persons who did good work were gifted with the ability to write good accounts of what they did, and the assurance was held forth that the aid of the advertising department in the way of arranging the reading matter in readable form was always available. The name and position of each contributor were to appear over his article, and it was pointed out that thus bringing oneself before the eyes of the readers of the magazine would make him better known and should aid him in many ways. From the first issue the magazine "New Business" was a success, and a perusal of the special number prepared in honor of this convention will indicate that there is no great dearth of the right kind of material. The contributions, it is true, do not always come in as briskly as desirable, but publication has been possible every month; and twice, as in the present month, they had been able to issue double-size numbers. Also it seemed that as the months passed, instead of the available material becoming exhausted, new subjects were being opened up more readily than at first, and the outlook for the future was especially favorable. He had talked with men from various situations in the Company's system, and they seemed a unit in the opinion that the Company organ is one of the best means ever devised for creating the "pull-together" spirit and conveying helpful information. Now, indeed, the individuals associated with the big system in various parts of the country seemed to feel as though they are one big, cohesive family, a feeling which they could not have hitherto had in as great a degree. The character of the articles and illustrations had been widely commented upon, and the magazines of general circulation in the industry are continually reprinting from "New Business" with the permission of the Company. Even in an independent company some such publication was easily possible, and in a very small company a paper written up on a typewriter and mimeographed answered the purpose very well. Two such papers to which special attention should be called are: "Gas," issued by the Consumers Gas Company, Reading, Pa.; and "Tips," issued by the Allentown (Pa.) Gas Company. These little sheets gave a great deal of information of local interest, and had done much towards perfecting a thoroughly co-operative spirit in the gas companies that issued them. They were doing in a smaller way what the "New Business" magazine was doing in more pretentious manner.

The President introduced Mrs. Anna A. Carroll, Demonstrator, United Gas Improvement Company, Philadelphia, who read the following paper on

PRACTICAL DEMONSTRATION.

The attempt to create an increased use of gas by its introduction as a fuel for domestic purposes demanded that the public be taught by example. Teaching by example is, as you know, "Demonstration." In its incipiency, demonstration consisted simply of explaining to the consumer how to light burners, simple instruction as to the regulation of the heat, and an observation of the correct adjustment of the appliances. To-day, when the use of gas is generally known, the work of practical demonstration becomes a science that must increase consumption by teaching greater efficiency in the appliances already installed; to make satisfied consumers by educating them up to increased gas bills that must necessarily follow the increased use of these appliances; to convert the person who has refused to consider gas as fuel, and to encourage and promote the sale of other appliances.

Practical demonstration means an analysis of the conditions in every home the demonstrator visits. Just what these conditions are can be determined only by observations and deductions made by the visiting demonstrator. To classify and aid in this deduction the work is divided into "new sets," "reconnects" and "inspection" or 'house to-house work." When a new range is installed it is advisable to call about one week afterward, when proper instruction can be given by the demonstrator. The principal causes of trouble found on these visits are as follows:

Lighting oven burners at mixers.

Turning on pilot and oven burners, with oven doors closed, before applying the match to pilot, causing an explosion.

Mistaking the report of back-lighting for an explosion, causing consumers to be afraid to use the range.

Insufficient flow and faulty adjustments that require a visit from the district shop.

Smoking ovens, caused by the grease put on by the manufacturer.

Consumer being dissatisfied with the type of range purchased. The demonstrator is often able to satisfy complaint, thereby preventing an exchange order.

After explaining the cause of these troubles a thorough instruction and talk should be given on the use of the range. The economy of using the simmerers, the necessity of turning down the top burners when articles reach the boiling point; painstaking instructions relative to regulating the burners for the heat necessary for all kinds of baking and broiling; the different kinds of food that can be cooked in the double oven type at the same time, thus saving time and fuel; and last, but very important, the proper care of the range.

In the inspection of "re-connects" a thorough knowledge of the business is required by the demonstrator, as many of the ranges when new had been used but little by the consumer previous to the visit of the demonstrator, and many causes of trouble are found notwithstanding the instruction given at their installation. A few reasons for unsuccessful results in this class of work are:

Baking on floor of oven—not understanding the placing of oven racks for pies, biscuits, etc.

Not heating the oven properly before baking and broiling.

Broiling meats with oven door closed, causing same to catch fire. (Many consumers have discontinued broiling on this account.)

Not using sufficient heat to do quick oven work. (False economy.)

Using agate and iron pans for baking, causing contents to burn on the bottom.

Failure to observe the credit dial of prepayment meter before a baking—failure results if meter shuts off before completion of work.

Obstruction of oven flue (covering flue or articles accidentally dropping in).

Insufficient gas, due to consumers reducing meter cock.

Broiling and toasting on top burners, thereby closing the burner ports.

"Inspection" or "house-to-house work" is one of the most important branches of the work from the standpoint of "practical demonstrating." When a range is new (or even re-connected) the demonstrator is met with a certain amount of interest in the mind of the consumer, and she is likely to be more receptive to suggestions, but in the inspection work the demonstrator is met with indifference, antagonism and very often ignorance. This is due to the fact that some consumers have lost interest through poor success with their range, others have never realized that using gas was substituting one fuel for another, and simply considered increased gas bills as added items of expense, while others are so indifferent to doing anything in the best way that they rarely use their ovens according to instructions given, or do so only at infrequent intervals. The demonstrator must not only prove to them that cooking with gas is the best and easiest way, but must arouse an ambition, causing them to want to do their cooking in the best and easiest way.

Here is where the skill of the good demonstrator is proven. She must create an interest. Even where ranges are in use, skillful questioning brings it out that consumers have an idea that certain classes of work cannot be done on a gas range. This idea must be corrected. Some conditions found in the inspection work and the means used to correct them are:

Ranges not connected. Demonstrator endeavors to induce consumer to have range connected.

Ranges connected by rubber tubing. Explanation made that this means of connection is to the consumer's detriment, and good results are impossible, endeavors being made to have same properly connected.

Ovens out of commission, used for storage purpose. Failure in the cooking of food in the oven has this result; proof given by demonstrator induces consumer to resume use of same.

Imperfect adjustments. Observation of such imperfect adjustment and order given to correct are followed by consumer resuming its use.

Need of repair. Consumer persuaded to have shopman call to estimate on necessary repairs. Result, restoring same to use, and from these cases many prospects for new appliances accrue.

(*Continued on page* 410.)

THE AMERICAN GAS LIGHT JOURNAL

Entered at the Post Office, New York City, as Second-Class Matter.

Published weekly at 42 Pine Street, New York City.

Telephone Call, John, 2996. Cable, Am-Gas.

A. M. CALLENDER & CO., - - Proprietors.

THOMAS J. CUNNINGHAM, ELBERT P. CALLENDER, } Editors.
H. THURSTON OWENS, - Associate.

CHARLES H. WADELTON, Manager.

Agents—American News Co., 11 Park Place, New York City.
Lemcke & Buechner, Berlin, Germany.
Aug. Siegle, 30 Lime Street, London, England.

TERMS OF SUBSCRIPTION.

United States, Cuba and Mexico, $3 per year. Canada, $4 per year. All other countries, $5 per year.
Single Copies, 10 Cents.

NOTICE TO ADVERTISERS.

New Advertisements and changes of copy therefor should be in hand Wednesday noon of week prior to date of issue.

NEW YORK, MONDAY, DECEMBER 25, 1911.

BRIEFLY TOLD.

OBITUARY NOTE, MR. FREEMAN C. SHERMAN.—The career of another of the veterans in the gas industry, the brunt of whose work was manfully borne in the times when the pursuit of the profession was over paths not at all so well blazed by the axe of practice as are those of the present day, was closed when Mr. Freeman C. Sherman passed away, at his home, 212 Orchard street, New Haven, Conn., the morning of the 18th inst. Born in Ware, Mass., March 21st, 1833, his early life was spent in the named town. Almost from the first (in fact at the outset of his business career) his connection was with the gas industry, he having early in life identified himself with the gas plant of the Otis Company, the great shops of which were located in Ware. In 1858 he was appointed Superintendent of the Newport (R. I.) Gas Company, and in the eleven year-period of 1859-70 he was Superintendent of the Brookline (Mass.) Gas Light Company. In the period 1870-75 he was Superintendent of the Worcester (Mass.) Gas Company, and his success in this field was such as to attract the attention of the proprietors of the New Haven (Conn.) Gas Light Company. Accepting that Company's terms, he undertook the duties of Engineer-Superintendent thereto, in 1875, and carried on the task until April 1, 1903, on which date he retired from active work, although from then until now he held the position of Consulting Engineer to the Company. In addition to these primal positions he was for many years a Director in the Meriden (Conn.) Company, and also served as Auditor to and for the Waterbury (Conn.) Company. Naturally his close connection with these important Eastern Companies brought him prominently before the industry at large. He was frequently consulted on matters pertaining to the manufacturing and business divisions of the industry, for he was an observant man, whose conclusions were never hastily formed, but once formed were usually trustworthy. His connection with Association work was quite extensive and a decade or so ago was of the active, valuable sort. He was a charter member of the New England Association of Gas Engineers; was elected to membership in the American Gas Light Association, at the fifth meeting thereof, and on its termination subscribed to the rolls of the American Gas Institute; was one of the earliest non-resident members of the Society of Gas Lighting; and was an Honorary Member of the New England Guild of Gas Managers. He frequently served those bodies as a committeeman in many ways and numerous times, was a frequent contributor to the paper lists, and ever ready during discussions to give freely of his knowledge and varied experience. No table amongst the papers prepared by him was one entitled the "Burning of Tar as Fuel Under Coal Gas Benches," which attracted much attention, and that resulted in the adoption of his method in many plants. He also collaborated with the late Samuel G. Stiness in perfecting an improved system of hydraulic mains, and many other small things useful in and about gas works as operated in the earlier days can be traced to his mechanical genius. Such is a brief recounting of his connection with the gas industry. Personally these things may be truthfully written of Mr. Sherman. He was of those who composed the ranks of old school gas engineers. Without the advantages of a technical education, he mastered thoroughly his profession through growing up with it, always taking an active part in its development, and to the last maintained a lively interest in its recordings. Although shrewd and wise in his business methods, nevertheless his was a genial disposition, actuated by generosity and impelled by liberal hospitality, of which certain evidence can be found during the occasional visits to New Haven of the Society of Gas Lighting. Indeed it is not saying anything wide of fact to say that many have material cause to remember and appreciate his warm friendship and hearty hospitality. He was an active member of the Church of the Redeemer during his lengthy residence in New Haven, and served it as Deacon since 1896. Another worthy work in which he was zealously interested, and of which he was a liberal supporter, was that of the Welcome Hall Mission, of New Haven, the charitable work traceable to which has gained fame for it throughout all New England. He served on the Executive Committee thereof from the time of its organization. His home life was that of a Christian gentleman. He was united in marriage (Thanksgiving Day, 1851) to Marcia Sarah Douglass, of Greenwich, Mass., who survives him, as do two sons, Charles D., and Edward F. The funeral services were held in his late home, the afternoon of Wednesday last, his counsellor and friend, the Reverend Watson R. Phillips, of the Church of the Redeemer, officiating. The mourners (who were many) included Messrs. F. S. Benson, Geo. G. Ramsdell, A. E. Forstall, C. H. Nettleton, R. E. Wyant and J. Arnold Norcross, of the Society of Gas Lighting, and Mr. D. R. Daly, of Jersey City, N. J. For many of the facts connected with this short history of a long, useful and honorable career we are indebted to attention from Mr. Charles H. Nettleton and Mr. J. Arnold Norcross. And to these things above narrated the compiler wishes to add that Mr. Sherman was known to him for 2 score years, and further adds that in the earlier days, Mr. Sherman was ever ready to give freely of his advice and counsel to those who sought it.

ANNUAL MEETING, SOCIETY OF GAS LIGHTING.—The annual meeting of the Society of Gas Lighting was held in New York the afternoon of the 14th inst. The proceedings were generally of a routine nature as to the regular order, although the annual dinner was in no sense devoid of all that goes with the best sense of comradeship. The officers elected were:

President.—Col. F. S. Benson, Highlands, N. J.
Vice-President.—Mr. A. H. Strecker, Newark, N. J.
Treasurer.—Mr. D. D. Flemming, Spring Lake, N. J.
Secretary.—Mr. George G. Ramsdell, New York City.
Mem. Ex. Com.—Mr. W. H. Bradley, New York City.
Finance Committee.—Messrs. A. S. Miller, New York City; Donald McDonald, Albany, N. Y.; S. P. Curtis, Philadelphia, Pa.

GRADUATE COURSE, HIGHWAY ENGINEERING, COLUMBIA UNIVERSITY.—Mr. Frank D. Fackenthal, Secretary of the University of Columbia, informs us that, the following lectures, incident to the Graduate Course in Highway Engineering, Columbia Univerity, will be given this week in the Auditorium, 301, Engineering Building:

"Manufacture of Refined Water Gas Tars," by Mr. Walter H. Fulweiler, Research Division, U. G. I. Company, Philadelphia, Pa., Wednesday, December 27.

"Manufacture of Refined Coal Gas Tars," by Mr. Philip P. Sharples, Chief Chemist, Barrett Manufacturing Company, Boston, Thursday, December 28.

These lectures are open to the public, and are set for 8 P.M., prompt. Heed should be given to the notification that the doors will be closed 5 minutes after the beginning of each lecture, and that those who attend will remain in their seats until the speakers have finished their work.

DECEMBER MEETING, ILLUMINATING ENGINEERING SOCIETY, PHILADELPHIA SECTION.—The regular monthly meeting of the Philadelphia Section, Illuminating Engineering Society, was held in the assembly hall of the Philadelphia Electric Building, 1000 Chestnut street, on

Friday, December 15. The dinner which preceded the meeting was held at Mosebach's restaurant, the attendance being 48 members and guests. After dinner adjournment to the lecture hall was in order, and at an interesting exhibition of illuminating appliances, for use by the physician and surgeon, these were examined. Further, a number of manufacturers of these novel contrivances demonstrated the devices later in the evening. The meeting was called to order at 8 P.M., by Mr. Joseph D. Israel, Chairman, 139 members and visitors being present. Mr. Israel introduced Dr. W. M. L. Coplin, Medical Director, Jefferson Hospital, and Professor of Pathology, Jefferson Medical College, who spoke on "Institutional Lighting with Special Reference to Hospitals." Dr. Coplin has made a thorough study of the problem of correct and efficient illumination, especially of wards and operating rooms in hospitals, both here and abroad, and a great many new ideas in regard to what is required in hospital lighting were obtained from him. The paper was discussed by Dr. William Spitzka, Prof. Hoadley, of Swarthmore College, Mr. C. B. Regard, Mr. C. O. Bond, Mr. F. N. Morton, Mr. C. B. Muth and others. For the facts herewith related we are indebted to the courtesy of Secretary Eichengreen.

DECEMBER MEETING, BOSTON SECTION, NATIONAL COMMERCIAL GAS ASSOCIATION.—President Nichols, of the Boston Section, National Commercial Gas Association, informs us that the next meeting will be held in Wesleyan Hall, No. 36 Bromfield street, Boston, at 8 P.M., of the 27th inst. The paper for consideration will be read by Mr. R. F. Pierce, Illuminating Engineer, Welsbach Company, Gloucester, N. J., the subject being "The Reflex Inverted Light and Its Possibilities." This paper will be the first of a series prepared for this season, on topics that the Association's executives believe will not only be of interest to all of their members, but also of great educational value. At this meeting action will be taken on the following proposed amendments to our By-laws:

Changing the name of this Section from "Boston" Section to "New England"

Changing the date of the annual meeting from September to October.

These proposed amendments were acted upon at the last meeting of the Board of Directors and are recommended by them. In urging the desirability of a large attendance, the officers thought it would seem only necessary to remind the members that the gentlemen who have consented to address the Association this season, have gone to considerable trouble and expense, consequently they should be at least rewarded by the attendance of every member who can possibly be on hand. President Nichols assures us the earnest desire of all should be to call the meeting promptly at 8 P.M., in order that there will be opportunity for full discussion of matters before the Section; also, that there might be opportunity for social intercourse at the close of the meeting. It is also noted that if the members who find it inconvenient to go home for supper, at the close of their regular duties, will meet at Marston's restaurant, No. 17 Hanover street, at 6 P.M., they will find other members there, which fact will give all an opportunity to meet socially, to the end of becoming better acquainted.

CURRENT MENTION—

THE January issue of "Gas News," published by the Consumers Gas Company, of Toronto, is at hand. The number is more than usually interesting, in that it contains quite a lengthy article on "The Sale and Purchase of Gas" from the pen of Mr. Arthur Hewitt, President of the Company. Another feature is the first instalment of the lecture on "The Hygienic Superiority of Gas Lighting," by Professor Vivian B. Lewes, the famous English scientist and gas man, whose presentation of this subject sometime ago, has attracted wide attention (world-wide attention, in fact) to the "Relative hygienic advantages of gas and electric lighting." "Gas News" proposes to continue the printing of the Lewes chapters in its subsequent numbers.

A GAS appliance show on a large scale is proposed for St. Louis, Mo., in the week between February 24 and March 2. The exhibition will be under the management of Mr. Henry A. Cochrane, who is a master along show lines of the sort proposed. The Coliseum has been rented, and the display will be quite up to the records set on these lines by the National Commercial Gas Association in New York, Boston and Denver.

THE annual meeting of the Gas and Electric Securities Company, a twin member of the H. L. Doherty & Co. Cities Service Company, will be held in Dover, Del., the 2d prox.

Now that it is proposed to put the gas service in Tampa, Fla., at a point where it will be satisfactory in all respects to the residents of that usually enterprising city, the extremists would fetter the capitalists in control of its lighting supply. We judge so from advices from that point, dated the 20th inst., which assert that at a recent meeting of the Tampa City Council, Alderman Johnson was especially outspoken in his declarations against the Gas Company. While it is undoubtedly odds-on that Alderman Johnson would be hard set to make the distinction between a bench of retorts and a set of purifying boxes, either in action or out of commission, he nevertheless blatantly asserted that at the present rate the Tampa Company was making something like 100 per cent. profit; it could easily make 40 per cent. profit were the rate cut to $1 per 1,000. His evident ignorance in the premises was patent, nevertheless he succeeded in having a special committee appointed to take up the matter of discussing the establishment of a lower rate schedule, the committee to consist of Mayor McKay and Councilmen Licata, Chambers and Falk.

WE are informed that certain Camden (N. J.) interests have purchased the properties of the Lambertville (N. J.) Gas Company, and will consolidate them with those of the Flemington (N. J.) Company, which have also been acquired by them. The joint enterprise will be carried on under the title of the Flemington Gas Light Company. It is likely that the two places will be hooked up by means of a high pressure line, which will enable the supplying of gas to the intervening settlements of Sand Brook, Seargeantsville and Stockton, or the settlements of Copper Hill, Ringoes and Mount Airy, according to whichever route is selected for the high pressure connecting link.

"AT the annual meeting of the shareholders in the Waynesboro (Pa.) Gas Company much interest was manifested, 98 per cent. of the shareholders having been represented in the balloting for Directors. The gentlemen chosen were those who served in similar capacities last year, and your correspondent understands that considerable additions will be made to the distributing system.—V. A. E."

CERTAIN residents of Sheboygan, Wis., have petitioned the Wisconsin Railroad Commission for a hearing over the claim that the local gas company is charging a price for the service much in excess of a fair rate.

WE understand that, despite all their pleadings and cajolings, Labor Manager Calvin Wyatt and his allies have succeeded in convincing less than 5 per cent. of the working forces of the Consolidated Gas Company that it would be a good thing for the latter to go on strike. Wyatt and his aides should make it a "Good thing" for the former.

THE Walkerville (Ontario) Light and Power Company is enlarging its plant by the addition of a 500 kw., Westinghouse-Parsons turbo-generator, which machine is designed to operate at 100 pounds steam pressure and under a vacuum of 28 inches. The generator is a 2-phase, 60-cycle machine, delivering 2,300 volts. The steam is furnished by 12 horizontal-return, tubular boilers which are operated by natural gas. This plant is operated in connection with the pumping station and the distribution serves the entire town of Walkerville as well as a part of the Sandwich East Township. The previous equipment of the power plant consisted of 1 McEwen, single-cylinder, engine, 18 by 18, running at 225 revolutions per minute, direct-connected to a Westinghouse, 200-kw., alternator. The order for the turbine equipment was placed with the Westinghouse Machine Company, East Pittsburgh, Pa.

"S. W. B.," writing from Columbia, S. C., under date of the 20th, informs us that the merging of the Columbia Gas Light Company with the Columbia Electric Street Railway, Light and Power Company has been completed. The succeeding corporation is legally known as the Columbia Railway, Gas and Electric Company. The rapid growth of Columbia made necessary considerable construction work on the gas division of the enterprise, noteworthy in such betterment being the construction of a gasholder up to retaining 300,000 cubic feet. In the distributing division 6 additional miles of street mains were placed, and the need on this account is so great that the planning thereon for 1912 specifies the placing of 15 additional miles.

MR. ABBOTT A. LAIGHTON, who presided over the destinies of the 1907 Class of the Malden (Mass.) High School, has been appointed Superintendent of the Gardner (Mass.) Gas Company.

MR. EUGENE CREED, Sales' Manager of the Morris Iron Company, Frederick, Md., in addition to his existing duties will direct the publicity department of the organization.

(*Continued from page 407.*)

Unused; claim food tasted of gas. Gas combustion is explained to the woman who thinks she tasted gas in her food, and a piece of toast made very close to the flame in order to prove that there is neither taste nor odor to consumed gas.

Ignorance of proper use. Consumers who do not understand the regulation of the oven burners, sufficiently to obtain good results, are taught the proper regulations, and the cause of their failure pointed out.

Occupants of houses piped, fixtures hung, nonusers of gas for light or fuel. Frequently persons are found who are not users of gas, due simply to carelessness or lack of initiative in signing for gas. Delinquents who refused to pay gas bills on principle, claiming they had not used same. Reasons for their refusal are frequently confided to the demonstrator, while such reasons would not be told to the office, and she is often able to placate such consumers.

The demonstrator on inspection work when she finds no gas appliances in the house makes the acquiring of these appliances so attractive to the consumer that, even if a sale is not already promised to a solicitor, an interest is created in the use of gas appliances, and their many advantages commented upon. Where gas and coal ranges are installed the consumer is trained to rely on her gas range entirely for best results, and the use of the coal range, at least for baking, discouraged. In furtherance of this scheme the demonstrator in different seasons should give special attention to various articles of food that would interest the consumer in that season.

Concerning cases where the gas range is discarded Saturday and Sunday, and the coal range is used in order to get hot water for baths and washing, the utility of a water heater is explained thoroughly; and, even in cases where the consumer has heard of them or where their use is understood, the demonstrator suggests their application to household purposes in such a manner that there is at least a possibility in the minds of many consumers who have simply regarded them as a luxury or something beyond their reach.

The lectures and demonstration work in public halls have been largely abandoned for the demonstration work in the homes, as the claim is made that these had not been productive of results sufficient to pay for the expense incurred. Where this has been the case these lectures will, in many cases, be found to have been given by a lecturer who devoted more of her time and energy to exploiting her skill as a cook than the showing of the efficiency and economy of gas as a fuel.

It is more important that the lecturer should be a qualified exponent of gas for fuel than an expert cook. One class of business that has been very difficult to secure is that of those who claim they will not trust gas ranges in the hands of servants owing to the cost of operating them. A series of lectures, showing a variety of full meals cooked on the gas range, with a meter operating in full view of the audience and consumption given at each lecture, would do more to convince this class of people than all the arguments or printed matter generally used.

Ignorance in the principles of cooking is another large factor in keeping ovens out of use. This is where public demonstration pays. We may sell appliances, see that they are adjusted properly and give instruction in their regulation; but if the consumer does not know how to mix her ingredients properly, or understands the science of baking or broiling, we still miss a large source of revenue from our installations. While the demonstrator has on hand a goodly supply of recipes to suit the taste of different individuals, she cannot do free baking promiscuously, and consequently cannot reach this class as well as free cooking demonstrations.

The demonstrator, to be a paying investment of the company, must be one who has been developed and thoroughly trained. So many manufacturers endeavor to reach the public through the medium of women canvassers, with the result that the housewives, especially in our large cities, are overrun with women ringing their doorbells, so demonstrators must prove themselves superior in every way to the average canvasser, for even though they secure an audience, they will not exert the proper influence to gain the confidence of the consumer.

The demonstrator must change conditions where possible, answering any questions that may be asked, and prove that she thoroughly understands her business, and to command the respect and attention of the consumer. Unless she can do this, she is not fully qualified to represent the gas company in a field where so much attention is being given to the development of the other forces of the company.

Another important factor in the demonstrator's work is the education of the consumer to the increased consumption necessary to make the sale of all appliances profitable, and it is her business to show the consumer not only how to do the maximum amount of work at a minimum cost, but also to educate the consumer up to increased gas bills, by convincing her that the money has been profitably expended. Many persons buying appliances, and even improved lights, are pleased with them until their bill comes in, and they immediately stop using them or send in a complaint asking to have their meter examined. A skillful instructor will make the consumer realize that the comfort and service derived from the appliances amply repaid the cost of operation. The question to consider is what class of women is best suited to secure these results:

She should be matured; a housewife resents being told how to cook by too young a person.

She should preferably have business experience before taking up this work; some knowledge of cooking, but not necessarily a domestic science graduate. It is much easier to train a woman to cook than how to use discretion and tact to handle people with diplomacy.

She should receive encouragement from the company she represents, and a systematic training be given her. Gas companies of today educate their men in every branch of the business, by bringing them together at stated intervals, and by lectures, papers, discussions and talks they are taught how to handle the various branches of the business.

Why should not our gas companies have some definite system in training their women? Our demonstrating force could then be more aggressive in refuting the many erroneous statements made from time to time in newspapers, magazines, etc. Only a complete knowledge of the subject by the exponents of the virtues of gas as fuel can ever bring it into the maximum use that it should and must attain when its advantages are understood.

The demonstrator, in dealing direct with the consumer, fills one of the most important positions with the company, and has not only to educate the consumer in the uses of appliances, but also in the principles and policies of the company; and, in order to do this, she must be educated to them herself. In no other way can she be fitted to adjust complaints satisfactorily and help create favorable public sentiment in the community towards the gas company.

Summing up the value of a demonstrator as a commercial factor might be mentioned: She may be a saleswoman without departing from her regular duties. Having access to the kitchen enables her to gain the confidence of the housewife and, qualified to make suggestions, she finds means to create new business where a salesman would be at a disadvantage. Possessing opportunity to observe the actual working of appliances, and fitted by experience and instinct to detect defects, either in the operation or condition of the appliances, she can more readily check up installation defects; so, in addition to being an educator, she also becomes an inspector of the physical condition of the gas range.

She is a disseminator of advertising too. There are many who never read advertisements, and the demonstrator is capable of conveying by word-of-mouth the information which cold type fails to convey. More than this, her very work is an advertisement and becomes culminative when the consumer whom she has benefited tells her friends of the result of the instructions received and how she has profited. It is her educational work, her active and intelligent encouragement, which keep home appliances in satisfactory use.

Discussion.

The President—This excellent paper is before you, and I regret we have not unlimited time in which to discuss it. However, we will discuss it very briefly, if not more than a minute, for a speech. Should we be unable to finish this discussion, it might be possible to continue it to-morrow.

Mr. Ganser thought this was an exceedingly interesting paper. In fact, seemingly the best yet put before the Association. Unfortunately, they all did not have a Mrs. Carroll, but it was up to them to train a demonstrator. Fortunately, they had in Norristown a young man of exceptionally good qualities, whose mellow voice made it a pleasure to have speech with him, who was doing this work for them. They trained him along these lines. In 1901 (he thought in Boston) he referred to their work in this respect, but his remarks were received in humorous sense; the time had not yet arrived for the demonstrator. He heartily agreed with Mrs. Carroll in the statement that it was not altogether necessary a woman should be a good cook, but it was esse ntial that she be taught to use gas intelligently. Mrs. Carroll covered all of the points thoroughly. He could not add

anything to what she had told them, but it was exceedingly important that the housewife or the cook be made familiar with the consumption of each burner. The work should not be done on a large top burner when it could be done on a smaller one. Two oven burners should not be used if one would do; and don't overheat the oven. Their young demonstrator had discovered, when an oven was overheated, it could readily be reduced in temperature. Taking a pan, filling it with water, and putting it in the oven, he saved many a woman's pastry. Mrs. Carroll's paper showed the deep thought she had given to this subject, and also showed considerable knowledge as to the intelligent use of the gas range.

Mr. Eves said he had prepared a lengthy discussion on the paper, the reading of which would take up much more of their time than a minute. He, therefore, asked that the discussion be renewed at a period when greater leisure would be their portion. [So ordered, by motion.]

Mr. Frueauff thought before taking leave of the paper, the authoress should be awarded a rising vote of thanks. It was the most complete summing up of the demonstration proposition that he had ever heard. He moved a rising vote of thanks to Mrs. Carroll. [Seconded and adopted.]

The Secretary said Mr. Holman (President-elect) would like to have a meeting at 9 o'clock the following morning, in the Directors' room of the Denver Gas and Electric Company, of the newly elected members of the Board. Mr. Holman proposed to return home sometime the following day.

The photographer now pictured the assemblage, and the President called attention to the fact that in the adjoining room the exhibitors had set up a splendid display. They owed them much for the time and trouble taken to prepare this exhibit, and as they were adjourning for the afternoon, so much time could be profitably given to a complete inspection of the exhibit placed for them.

A motion to adjourn until the following morning was adopted.

THIRD DAY—MORNING SESSION.

Resuming Discussion on the Carroll Paper.

The President asked Mr. Eves to reopen the discussion on the Carroll paper, which was done as follows:

Mr. Eves—Mrs. Carroll in contributing an excellent paper has shown the value to gas companies of this instruction department. It is the most comprehensive paper ever given on the subject of practical demonstration. We have been closely interested in demonstration work during the last 14 or 15 years, and our demonstrating department has been developed from its earliest stages to the more advanced methods of giving demonstrations at hospitals and other public institutions as well as at the homes, thus reaching the public in a more wholesale way and accomplishing far higher results. The experience thus gained in this instruction work finally led to the establishing of a "Model Kitchen" in our gas office in Indianapolis, which illustration is attractive and is accomplishing excellent results. Mrs. Carroll says that an important factor in the demonstrator's work is the education of the consumer to the increased consumption necessary to make the sale of the appliances profitable. The sale of a gas appliance does not guarantee to the gas company any increase in the output of gas, unless the appliance is used, and for the same reason the more the appliance is used the greater will be the output. Now, our experience in Indianapolis, after carrying on this demonstration work, is that, whereas only a comparatively small portion of the gas consumers formerly used the baking ovens of their gas ranges, and very few used the broiling ovens at all, now 95 per cent. use the baking ovens and 92 per cent. the broiling oven. If this evidence increase in the gas sales were all the benefit gained, the expense of the demonstration work would be far more than repaid, but we must not overlook the superior gas service and the increased goodwill that come to the gas company by teaching its patrons all the advantages of the appliance sold. The "Model Kitchen" is the place to which gas consumers come for advice and information. It is a most important adjunct to the public demonstrations, because, while the demonstrations give the lessons in a public manner, it is the individual difficulties and troubles that can be dealt with and remedied in the kitchen. From our experience we can strongly advocate the adoption of a "Model Kitchen" by all gas companies. Photographs showing this "Model Kitchen," with the placing of the gas range and their furniture, may be seen at the close of this session on the "Bulletin Board" near the registration booth. From these photographs it will be seen that we have established a library of books on cookery and kitchen affairs. In connection with this library we subscribe to "The National Food Magazine," and print and distribute free recipes each month. In the words of one of our booklets on "The Kitchen," the woman patrons "Make this beautiful room, this model or matchless kitchen, their resting place, where they have a quiet opportunity, amid cozy and appropriate surroundings, to consult the standard books and authorities, and get the inspiration and ideas so helpful to the home life." Mrs. Carroll says that a demonstrator may be a *saleswoman* without departing from her regular duties. Some demonstrators, and a few gas companies, do not agree with this view, on the ground that the demonstrator's time is too valuable to be taken up with selling gas appliances. I coincide with Mrs. Carroll, however, and have shown in a recent paper on "The Value of Instruction in the Operation of Gas Appliances," that this question of making sales or suggestions to housewives and cooks on the convenience and better gas service to be derived from the use of the smaller appliances, is one of considerable importance both to the consumer and to the gas company. It is not possible, and may not always be advisable, for the demonstrator to make the sale at the time of the visit, but the "prospects" can be handed to the salesmen and the orders will be obtained sooner or later. I have more particularly in mind the "kitchen heaters" which are sold by gas companies in order to keep the gas range in service through the winter. The winter use of the gas ranges installed means a very considerable addition to the gas sales. Now, the demonstrator when giving her expert advice and suggestions is the very one who can best explain the cleanliness, comfort and economy of the kitchen heater, and very frequently the patron is grateful for the information and will appreciate the further assistance if the demonstator will take the order and have it attended to. Our own demonstrators have made sales in 35 per cent. of the cases visited at the homes. These sales include the kitchen heaters and the smaller appliances that use or popularize gas.

Mr. Gulbrandsen said that one thing in Mrs. Carroll's paper, which struck him rather forcibly, was the importance of impressing the housekeeper that it was not necessary in boiling a liquid to keep the gas going full tilt, while boiling her vegetables and meat. Amongst the better class of housekeepers there was a distinct impression that the harder a liquor was boiled the quicker the cooking was accomplished, seemingly not realizing that, once a liquid was raised to 212°, it would remain at that point until the liquid vanished through evaporation. He had seen college students put two flames under a water bucket in their desire to cause the water to boil harder. If demonstrators and gas companies so impressed their customers, they would not have so much complaint over high gas bills.

The President called on Mrs. Carroll to close the discussion.

She remarked she had not very much to say in supplement of her remarks of yesterday. She did not believe in a demonstrator closing a sale, in that it created distrust—not everywhere, perhaps; but the general impression seemed that instead of giving the consumer a free service, as she told them when entering the house, they considered her visit had ulterior motives. She came in telling them her object was to show them how to do something, whereas her object was to sell. By suggesting the use of things she accomplished more real good than if she sold the article. In a particular case a demonstrator on entering a house found the maids using 4 top burners with 4 irons on the exposed flames. Asking if that was satisfactory, and kept the irons hot, the reply was: "Yes, they are too hot; but they are rough. We like to heat our irons on the coal range." The demonstrator remarked: "I don't wonder. Haven't you an iron heater?" And neither of them knew what an iron heater was. Then the demonstrator asked the maid to take her card up to her mistress, with the information that she would like to see her. That if it were inconvenient for her to come to the kitchen, the demonstrator would come to her. The latter course was chosen, and this debate ensued: "Your maids are using 3 times as much gas as necessary to do their ironing in the kitchen, and with great inconvenience to themselves. Putting an iron on an exposed flame roughens the surface, and they are obliged to wax it every time they take the iron off the flame. It takes time, they can't iron as well, and you are wasting gas." The mistress replied: "Well, I have so much trouble in using the gas range on washing and ironing days. The maids insist on having the coal range going on washing day for hot water, but I absolutely refuse to allow them to run it on Tuesdays, because it heats the wall so that it is insufferable." The demonstrator said: "You can change that by using a water heater," and the mistress did not know what she meant. The demonstrator said, "Come to the kitchen and I will show you how a water heater works." The mistress did so, saying

to the maids, "I am trying to make your wash day and ironing day easier." The demonstrator showed them just how the water heater should be connected, remarking, "I don't sell these things; I am just explaining to you." The mistress asked, "Will you send your salesman to my husbands' business office to-morrow?" They closed that sale, had the water heater connected next Monday for washing, and for ironing had sold two iron plates. When a special representative (the sale having been closed so easily) met the man who had the district, he said, "You haven't canvassed that district properly; you hadn't even a prospect for that water heater." The salesman's reply was, "I couldn't get an audience," and he couldn't. Instance-after-instance could be cited. The indirect way (if the demonstrator was familiar with the fact) was often signally successful. Say she finds a gas range in an outside kitchen, where she knows it won't be used in the winter time. Getting in touch with the situation she gets that gas range to the inside kitchen. Indirect work should be carefully done else it will raise antagonism right in the force. The sales man says, "Here, we are supposed to have a district, but the demonstrator goes right out and sells in my territory." But we can help, for the demonstrator knows where she could increase consumption. She can see conditions better than anybody else in the force. Being right in the kitchen she sees just how that household is run. One other point the speaker wished to bring out, was the need for some concentrated movements so that they might have trained demonstrators; that they might cause the work of these to become better appreciated and understood. Gas demonstrators should be so good that when a woman had a visit from one of them she would know she was being benefited. A woman not well trained really mocks the purposes of the company. The housekeeper says: "I wonder why they sent that woman around to take up my time. I didn't ask for anyone." They must prove their value. When one got there one must make her welcome in the home. While the consumer doesn't want them when they came, she may nevertheless need you. Such is the thing that must be proved to her. They had to know how. A man didn't understand the importance in this work, of the necessity of education. Seeming to form plans in all other lines, when they put a demonstrator on the pay roll they simply launch her forth with some cards. She is not admitted to the closer workings of the company, not knowing enough thereof, she fails to adjust so many minor difficulties right on the spot, whereas properly taught, she could show the policies of the company, and tell the consumer with a grouch, so-called, why the company did these things. If she could make the gas men understand its importance, she felt the purpose for which the paper was written, had been accomplished. [Applause.]

The President remarked it was indeed a great pleasure to listen to the splendid paper and remarks thereon made by Mrs. Carroll, who had made such an impression on the convention that he thought it would stand them well at some future convention to have a greater number of ladies on the programme. They then listened to the paper prepared by Mr. S. Gulbrandsen, of the Welsbach Company, on the

MANUFACTURING OF GAS MANTLES FROM ARTIFICIAL FIBERS.

Gas illumination is so closely linked with the development of the incandescent mantle that the story of recent improvements in this field will perhaps be of interest to this Association.

Some people use electricity in preference to gas because they believe mantles are too fragile. While this attitude is often due to experience with inferior goods, it is also due largely to the fact that a great many consumers do not know how to handle a mantle and have no idea of the nature of the product they are using. Undoubtedly, gas companies could perform a great service by educating their customers in the proper installation and care of mantles. The education of their own fitters also is often far from completed.

In the present keen competition between gas and electricity, mantle manufacturers the world over have endeavored to meet this situation from their own side. They have been trying to improve the quality of their mantles so as to make them better fitted to survive abuses by the ignorant, as well as the legitimate wear-and-tear of service. Of equal importance with durability is the maintenance of candle power and color value of light; and all of these points have received careful attention. Now, let us see what factors enter into this question of quality. The quality of a mantle depends, in the first place, on the nature and quality of the materials put into it; and, in the second place, on the skill and care with which it is made. Any improvements in quality, therefore, must come from either of these directions.

Considering the mechanical part first, there are a great many delicate operations connected with the making of a mantle. In any one of these poor workmanship would result in an inferior product, or ruin it altogether. Very thorough supervision is needed to keep these operations up to standard. These mechanical operations, however, have been so well standardized that no startling improvement in the quality of mantles can be looked for here. So, in our search for improvements, we must look to the materials used in the process.

Before considering these, let me bring to your attention very briefly the principal steps in mantle making. A knitted, hose-like fabric, usually made from cotton or ramie, is soaked in a liquid called lighting fluid. This lighting fluid is a solution of thorium and cerium nitrates in water. The webbing is then wrung out and dried, and the top is sewed up with an asbestos cord. The cotton or ramie is then burned out, leaving the thorium and cerium in the form of an ash, which is hardened and shaped. This is then dipped in a collodion solution, which forms a protective coating around it.

Of the materials used in mantle making only three have any marked influence on the quality: The webbing, the lighting fluid and the collodion. I might even omit the collodion, for its only function is to protect the mantle during shipment. If the collodion gets the mantle to the consumer in as good a condition as it was when first manufactured, that's all we can ask of it.

The question of lighting fluid has been thoroughly studied. This, as I've said, is composed of thorium and cerium nitrates in a proportion of about 99 parts of thorium to 1 of cerium. These chemicals have to be prepared on a large scale and must be of the highest degree of purity. The greatest care must be exercised in their manufacture, as the slightest trace of impurity will result in an inferior mantle.

Now, let us consider the webbing which we saturate in lighting fluid.

It is very important to remember that the ash of the finished mantle has the same physical structure as the original fabric from which it was made, whether it be cotton, ramie or artificial fiber. An examination of the above cuts, made from microscopic enlargements, will show this similarity in structure. This being the case it is obvious that the strength and other physical properties of the mantle depend very largely on the nature of the original thread. It is clear that we have here the most promising field in which to look for improvements.

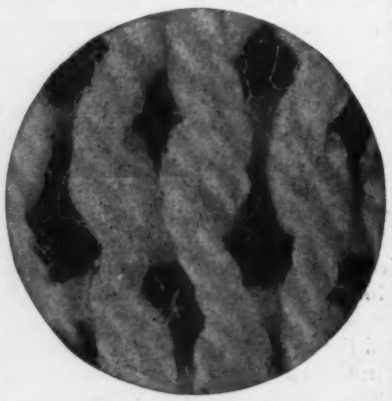


Fig. 1.—Cotton Fabric.

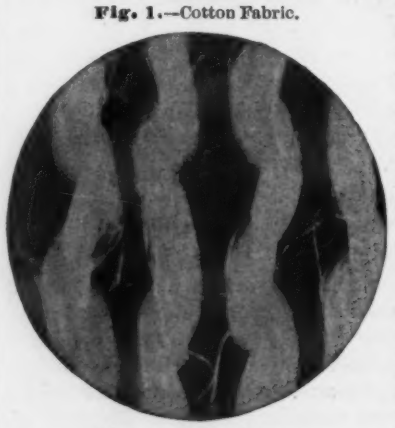


Fig. 2.—Ramie Fabric.

Fig. 3.—Artificial Fiber Fabric.

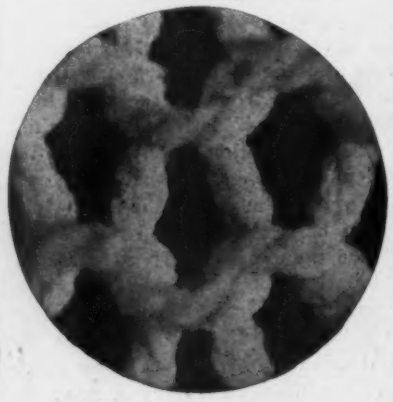


Fig. 4.—Cotton Mantle.

Cotton and ramie have been used for many years in mantle-making and artificial fiber is a recent development. For perhaps a dozen years after the discovery of the incandescent mantle all mantles were made from cotton, and in those days it was miracle enough to make any kind of a mantle. The industry was absolutely new and was beset with all kinds of difficulties, both chemical and physical. The pioneers in the field were undoubtedly so occupied with these problems that they conld give but little thought to the refinements in mantle-making with which we are familiar to-day.

Ramie, which was first introduced in mantle making by Buhlmann, in 1898, is a vegetable fiber somewhat similar to cotton. It is found in a plant called "China Grass" or "Ramie," which is grown extensively in China and India. It was immediately seen that the ramie mantle had certain marked advantages over cotton mantle, particularly in maintaining its candle power, and to-day a considerable proportion of the world's production of mantles is made from ramie. This is especially true of inverted mantles. Before taking up the question of mantles from artificial fiber, a few words about the manufacture of the fiber itself may be of interest.

In 1885, Count Chardonnet, a Frenchman, conceived the idea of dissolving cotton, as you might dissolve sugar in water, and squirting the solution through a number of very fine holes, thus forming artificial fibers of cellulose, as distinguished from the natural fibers, such as cotton, ramie, etc. Theoretically, of course, any method of getting cellulose in solution might be considered a starting point in the manufacture of artificial fiber. Unfortunately cellulose is a very inactive substance chemically, and there are only a very few solvents known. The methods of dissolving cotton are as follows:

1. The best known method of getting cotton to go into solution is to change the cotton to nitro-cotton and dissolve

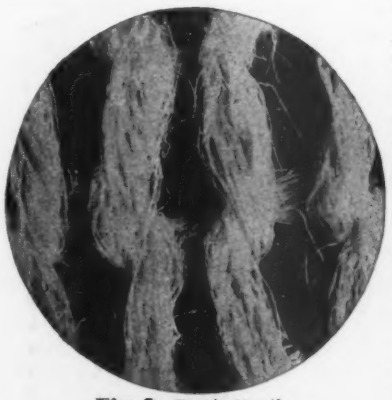


Fig. 5.—Ramie Mantle.

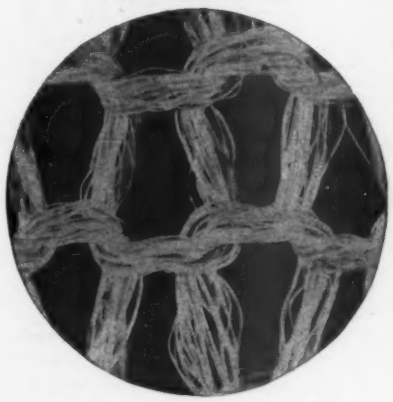


Fig. 6.—Artificial Fiber Mantle.

this in a mixture of ether and alcohol. This solution is known to the trade as collodion.

2. For some mysterious reason cotton dissolves in a solution of copper oxide in ammonia. This material is used to some extent in waterproofing paper and other substances.

3. Another remarkable method of dissolving cotton was discovered quite recently by Messrs. Cross & Bevan, the great English authorities on cellulose. They found that, if cotton is soaked in a strong lye solution, and then treated with carbon bisulphide, a substance is formed which dissolves readily in water. This substance is known to the trade as Viscose, on account of its thick, viscous nature.

4. Cotton also dissolves in a strong solution of zinc chloride.

The first three of these methods have been worked up into commercial processes and are all in use to day. A great deal of work has been done on the zinc chloride method, but with little success. The zinc chloride method, however, is used extensively in making carbon filaments for electric lamps. Let us consider briefly the three processes in use to day:

1. The nitro-cellulose process, being the one developed by Chardonnet, was, of course, the first on the market. By this process the cotton is first changed to nitro-cotton, by immersing in a mixture of nitric and sulphuric acids. The product is then washed free from acid, dried and dissolved in ether and alcohol, making a thick, viscous solution. This solution is then forced under very strong pressure through a series of very fine orifices, making a corresponding number of very fine continuous filaments. The solvent evaporates very quickly on striking the air and the filaments solidfy; 12 to 25 of these filaments are spun together to form a thread. Of course, it would be out of the question to use a material as inflammable as nitro-cellulose for the manufacture of fabrics, so the thread is afterwards passed into a denitrating bath, which removes the "nitro" part and leaves the cellulose. In other words, we start with cotton, change it to nitro-cotton, which we dissolve and form into threads, and then take out the "nitro" part, leaving the original cotton, but with an entirely different physical structure. Instead of the short, hollow, opaque fibers of the original cotton, we now have solid, lustrous filaments of unlimited length. Changing the cotton to nitro cotton is simply a trick to get it to go into solution.

2. *Cuprammonium Process.*—The cotton is dissolved in the solution of copper oxide in ammonia, and the solution is squirted, as before, through a number of fine apertures. In this case, however, the filaments do not solidify when they strike the air. So the threads, after being squirted, are passed through an acid bath, which not only precipitates the cellulose and "sets" the filament, but also removes most of the copper from the thread. Then the filaments are passed through other and more dilute acid baths, which wash out the rest of the copper and other mineral impurities.

3. *Viscose Process.*—In the viscose process we start with the solution of cotton in lye and carbon bisulphide. The general process followed, however, is the same as the cuprammonium method. The cuprammonium process was introduced about 1900, and the viscose 3 or 4 years later, and both are gradually outstripping the nitro-cellulose process on account of the lower cost of production. In the latter process many expensive materials are used, particularly ether and alcohol, which are only partially recovered. The remarkable nature of this material is realized when we consider that a thread weighing 1 pound will reach 20 miles. This thread in turn is composed of 20 strands; if these could be separated and placed end-to-end it would reach 400 miles; 10 pounds would reach from Maine to California.

Turning to the question of mantles from artificial fibers, it is interesting to note that experiments have been conducted along this line for over 15 years. It was not, until about 5 years ago, that anything at all commercial was obtained, and it is only very recently that the mantle has been developed to a satisfactory point.

The first experiments along this line were conducted by Knöfler, in the early nineties, who conceived the idea of mixing the thorium and cerium nitrates with a solution of nitrocotton in ether and alcohol and squirting this solution through fine orifices. A patent was taken out on this process by Knöfler in 1894.

De Lery (in 1897) and Plaissetty (in 1900) also took out patents on this process, each introducing certain variations.

None of these schemes, however, turned out to be a commercial success. The factory difficulties were certainly enormous and apparently insurmountable. In addition, the product was not sufficiently superior to the mantles then on the market to justify the extra trouble and expense.

Plaissetty, after his early failures, persevered and finally conceived the idea of taking the knitted fabric of artificial fiber and saturating it in the lighting fluid direct. This is such a simple solution that it may seem surprising no one thought of it before; but, let us consider a moment. Artificial filaments are absolutely solid and rod-like in structure, while cotton and ramie fibers are hollow and tube-like. On second thought it seems a little surprising that this solid filament *can* absorb the lighting fluid direct. Not only that, but it absorbs 50 per cent. more than the sponge-like cotton and ramie. The reason it can do this is that it is colloidal in nature. When put in water or lighting fluid it swells up and becomes rather jelly-like in structure. Then, when dry, it resumes its original form, but retains the lighting salts in a state of very intimate mixture with the cellulose. If we attempt to harden a mantle made from this saturated fabric the ash would fall to pieces. This is due to the violent burning caused by the nitric acid in the thorium nitrate. Plaissetty found that, by treating the fabric with ammonia, this trouble was eliminated. This process was patented, by Plaissetty in Germany, in 1902, and in this country in 1904. It attained very soon a certain commercial success, for the mantles were superior in strength and candle power life to anything that had been made hitherto. This success, however, was, and is, limited by the fact that the mantles cannot be collodionized satisfactorily. They are sent out in a soft state and hardened by the gas company or the consumer. In Paris the hardened mantles are sold on galleries without being collodionized.

Building on the foundation laid by Plaissetty, the problem of making a commercial mantle from artificial fiber has been studied very thoroughly, and Plaissetty's results have been much improved. Now, let us consider the qualities of this mantle to see in what respect it is superior to cotton and ramie mantles, and why.

1. Artificial fibers are superior to natural fibers for mantle making, because, being manufactured, their physical structure and chemical composition are predetermined and may be controlled exactly. On the other hand, we have to take natural fibers as we find them, doing the best we can with a product which we know varies in both physical and chemical makeup. When we consider the method of manufacture we can readily see why we get this uniformity of composition. We take the natural cellulose and dissolve it in a copper-ammonia solution; this solution is thoroughly mixed, so that every drop is exactly like every other drop. It follows inevitably that the threads spun from it must be absolutely uniform in composition. In natural fibers, however, it is a well known fact that the impurities are often unevenly distributed; there may be very little in some places and a great deal in others, thus tending to make a mantle weak in spots. Also—and this is a very important point—many of the impurities in natural fibers, which are harmful to a mantle, such as silica, iron, alumina, etc., are not soluble in the copper-ammonia solution. These are, therefore, left behind when the cellulose is dissolved and are filtered out. Thus we have removed at the very start substances which give untold troubles in the manufacture of cotton and ramie mantles.

2. When we study the physical structure of the fibers we see very plainly the reason for the superior strength of the artificial fiber mantle. Natural fibers, such as cotton and ramie, vary in length from 1 inch to 1¼ inches in the cotton, and from 2 inches to 10 inches in the ramie. Furthermore, cross-sections of the natural fibers show them to be hollow, resembling tubes or pipes, and often badly flattened or distorted. Artificial fibers, on the contrary, are absolutely continuous; we may have filaments miles and miles long. They are solid, resembling rods. Inasmuch as every physical feature of the original cellulose fiber is reproduced exactly in the ash fiber of the mantle, it is obvious that the uniform, continuous and solid artificial fiber will produce a like structure in the ash of the finished mantle. It can readily be seen that such a structure will make for greatly increased strength. Ash is something that has no strength inherent in itself; whatever strength it has is the result of the physical structure inherited from the material from which it sprang. This may be illustrated to a certain extent in cigar ash. The ash from a superior cigar, made of long filler, is firm and coheres well, while that from a cheap cigar, made of short stubble, is loose and crumbly and keeps dropping off continually. We may compare the structure of an artificial fiber mantle to a cable composed of long, continuous, steel wires, and that of a cotton or ramie mantle to a cable made up of short wires, more or less loosely twisted together. In the first case, the tensile strength of the cable is equal to the sum of the tensile strengths of the wires composing it. In the latter, however, the strength of the cable would be only as great as the friction of the twisted wires over each other. By consulting Figs. 2, 4 and 6 this comparison will be made clear. An artificial fiber mantle will support a weight of 1 ounce, suspended from its loop, without breaking. This is a remarkable tensile strength for a product which after all is composed of nothing but ash.

The surprising coherence of the fibers may also be shown by telescoping the mantle until the surface is one mass of folds and wrinkles. It may then be straightened out and will be found still intact.

3. *Candle Power Life.*—Cotton mantles show an appreciable falling off in candle power during the first 100 or 200 hours of burning and a slower but progressive decrease thereafter. After 1,000 hours the candle power may have fallen off about 35 per cent. During this time also the color of light alters gradually, changing from the original standard to a white color.

Ramie.—Ramie mantles maintain their candle power much better than the cotton. During the first 100 hours very little depreciation

Fig. 7.

Fig. 8.

Fig. 9.

takes places; in some cases even a slight increase has been noted. Even after 1,000 hours little change takes place, provided the mantle has kept its shape. If however, shrinkage takes place, the candle power may fall off 10 to 20 per cent. The color of light of a ramie mantle also changes to a whiter shade.

Artificial Fiber.—Artificial fiber mantles increase in candle power during the first 100 or 200 hours. This increase usually amounts to about 10 per cent. From this point a long life test shows very little variation in candle power; in some cases a slight increase being noted, in others a slight decrease. The color of light changes very little, being scarcely noticeable, even after 1,000 hours of burning.

4. *Shrinkage and Loss of Strength on Burning.*—Cotton mantles invariably shrink, due to the closing up of the hollow fibers. This shrinkage is very marked after 200 to 300 hours, particularly on the lower grade mantles, and continues for 500 to 600 hours, after which time the size remains fairly constant. This shrinkage not only diminishes the effective lighting surface of the mantle, but if the gas adjustment is not changed it will cause carbonizing. On burning, a gradual change in physical properties takes place. From a soft, flexible condition the ash changes to a hard, brittle state and cannot be pressed in without crumbling.

The shrinkage of ramie mantles is much less than that of cotton. In the case of the hard, inverted mantles it is usually negligible. The upright mantles, however, generally show a little shrinkage during the first 100 hours, after which the size remains constant. The change in physical strength of ramie mantles on burning is very marked. They gradually become harder and more brittle. They crumble readily, when pressed in, and show a marked tendency to disintegrate, this being particularly true of the upright type.

Artificial fiber mantles show no shrinkage whatever, either in the upright or the inverted form, even after burning several thousand hours. In this connection an interesting point may be brought up. In burning upright mantles with an airhole chimney, cotton and ramie show a decided tendency to pucker in and wrinkle opposite the air holes. This seems to take place in varying degrees under different gas conditions. The artificial fiber mantle, on the other hand, has been tested out thoroughly under widely varying gas conditions and not a single instance of this puckering has been seen.

Artificial fiber mantles do not deteriorate in strength nearly so rapidly, nor so much, as the cotton or ramie mantles. This may be seen especially in the upright mantle, which is made very soft and flexible to begin with. Even after burning 1,000 hours, the mantle preserves its softness and flexibility and may be pressed in freely without breaking.

In conclusion, the artificial fiber mantle may be said to mark a distinct advance in the art of mantle making; perhaps the greatest since the introduction of the thorium-cerium mantle.

(To be Continued.)

Items of Interest
FROM VARIOUS LOCALITIES.

MR. CHARLES ORR, Director of Schools, Cleveland, O., writes that sealed proposals will be received at the office of the Clerk of the Board of Education (East Sixth street) until noon of the 8th prox., for furnishing automatic gas valves to comply with city ordinance No. 21,627, and in accordance with specifications on file in the office of the architects of the Board. Specifications are procurable at the Director's office on application, and it is declared that all proposals must be made upon blanks furnished by the Directors. Each bid must contain the name of every person interested in it, and the bid must be accompanied by a certified check for at least 10 per cent. of the total amount bid. A corporate surety bond in 100 per cent. of the bid amount is also required on all contracts.

MAYOR HINCK, of Montclair, N. J., has issued orders to the Public Service Gas Company, of New Jersey, to "Place all gas and other piping which protrudes beyond the end of a wagon on the right hand side of the vehicle." He has also ordered the Company to mark the end of protruding pipe that is being transported through the streets by means of a red flag in the day time and a red lantern at night.

ANOTHER link in ties that will bind the Jones family firmer to the Pacific Coast is that which was formed through the marriage of Marie Louise Bertaud to Leon Barrett Jones, which ceremony is matter of record the 22d November, San Francisco, Cal. Mr. and Mrs. Jones announce that they are at home, 2940 Pierce street, San Francisco, since the 15th inst. The best of good luck to them.

REFERENCE to our advertising columns will show that, on January 13, 1912, an examination for Assistant Inspector of Gas, Public Service Commission, New York State, Second District, will be held in various cities throughout the State. Full particulars respecting the examination can be obtained through inquiry directed to the Public Service Commission, Albany.

WE are indebted to Mr. J. Vanden Bout, Superintendent New Business Department, Williamsport (Pa.) Gas Company, for a copy of the "Pennsylvania Grit," a Sunday paper issued by the Grit Publishing Company, of Williamsport. The paper has a circulation of 13,000, which circulation is mainly confined to Williamsport and its many busy suburbs. The front page of the issue in question is mainly devoted to an illustrated article, describing in detail the plan and method of cooking teaching as carried on in the Williamsport High School. The plan does not differ materially from those instanced in other cities, save that it is on possibly a much larger scale than usually found. The equipment comprises 2 large gas ranges and their equipment, not to mention several individual hot plates used for demonstrating in separate class work. Gas is used exclusively. Mr. Vanden Bout, in his inclosure to us remarks: "* * * I am sending you a copy of this paper, as I consider it explanatory of a good system of advertising; and while this subject of advertising is being so widely discussed at the present time, the article might suggest, to some of the commercial men, in the smaller cities at least, an avenue to popularize the 'all gas kitchen.'"

THE Public Service Commission (Second New York District) has authorized the Northern Westchester Lighting Company to issue $72,000 of its 5 per cent. bonds, redeemable January 1, 1955. It is stipulated in the order that the bonds shall not be sold at less than 95, the proceeds to be used in discharging matured bonds of the Sing Sing Gas Manufacturing Company for the purchasing and cancelling of the bonds of the Sing Sing Electric Company.

THE Public Service Commission (Second New York District) has issued an order directed against the Central New York Gas and Electric Company to show cause why a direction should not be entered requiring the parties named to manufacture, sell and distribute coal gas in the villages of Palmyra, Lyons and Newark, in conformity with the prescribed standards of illuminating power and purity. The Company is also required to show cause why it should not make such improvements to its plant and distributing system as will result in improved conditions, under which gas is made and distributed in these villages, with proper regard to the pressure at which gas is maintained.

MR. FRANCIS W. FROST, formerly Secretary and Treasurer of the Engineering News Publishing Company, has been elected Vice-President and Treasurer of the corporation of Suffern and Company, with headquarters in 96 Wall street, N. Y.

AGAIN to the fore is the clever, painstaking, persistent gentleman (Mr. C. A. Learned), whose direction of the fortunes of the Meriden (Conn.) Company, has been of the kind that brought profit to its proprietors and fame to himself. It is not so long ago that Mr. Learned was asked when he expected to reach the output capacity of a water gas apparatus then installed on the plant by the Gas Machinery Company, of Cleveland, O. Mr. Learned declared that time would tell; and time (very "near" time at that) did tell; for, writing under date of the 18th inst., Secretary Steinwedell, of the Gas Machinery Company, informs us to this effect: "The Gas Machinery Company has been awarded a contract by the Meriden (Conn.) Gas Light Company for an 8-foot water gas apparatus, to be installed alongside the water gas machinery placed there by us some years ago."

WE are advised that Mr. S. M. Goodman will continue to operate (as Trustee) the plants of the Hamilton (O.) Gas and Electric Company, having accepted the appraisement ($744,633,14) of the plant, as submitted to Referee H. H. Haines by the latter's Board of Appraisers, Messrs. Morey, Clawson & Howel. Our informant adds: "No request for an order of sale will be made for the present; but an effort will be made to continue the plant on a paying basis, and to carry it through its financial difficulties without resorting to the saving grace of a sheriff's sale."

"W. M. M.," writing from Boston, Mass., under date of the 15th inst., says: "While only a man of labor, and largely self-taught, it is nevertheless true that many of wealth and learning, who have gone to their final reward, have passed out of earthly life with fewer sincere mourners than those who grieve over the death of Edward J. Powers, for 33 years in the service of the Dorchester (Mass.) Gas Light Company. Born in 1851, at an early age he entered the service of the Dorchester Company, and served it faithfully and well until the final summons was made, the night of December 11th. The funeral services were held in St. Peter's Church, Meetinghouse Hill, Dorchester, the morning of the 14th inst., and interment was made later on in Mount Benedict Cemetery. He is survived by his widow, 6 daughters and 4 sons. Always a man trusted by his employers, his name recalls to the writer of this mention, the name of the late J. Q. A. Spear, many years ago Superintendent of the Dorchester corporation, under whose tutelage Mr. Power acquired most of the practical knowledge, the application of which resulted in material benefit to his employers. He was a conscientious, capable man."

DURING the coming year large expenditures on construction and reconstruction accounts will be made by the proprietors of the Racine (Wis.) Gas Light Company. Prominent in the listings will be the completion of a bulkhead and pier system to permit of the handling coal and other heavy supplies by means of modern machinery.

ON January 1st certain employees of the Lynn (Mass.) Gas and Electric Light Company will be put on 8-hour per day schedule, without change in rate of pay. The classes affected include: Stokers, foreman, coal passers and laborers.

THE City Gas Company, of Ardmore, Okla., has been organized to take over the plants and franchises of the Ardmore Heat and Light Company. It is capitalized in $100,000, and its officers are: President, P. C. Denis; Treasurer and Secretary, J. S. Connelly, of Carthage, Mo.

"L. R. L.," writing from Springfield, O., the 20th inst., says: "It is with real regret that I informed you of the death of Nicholas Canny, for over a third of a century in the service of the Springfield (O.) Gas Company, three-fourths of which term he served as foreman of construction. His death occurred the morning of the 13th inst., at his home 664 Boler street, Springfield, and it was the sequel of an illness that covered quite a long period. He was born in Lismore, Galway County, Ireland, September 27, 1842, and came to America in 1865, settling in Springfield, where some relatives preceded him. Shortly after his arrival in Springfield he accepted a post on the mainlaying force of the Springfield Gas Light and Coke Company, and as that Company grew especially under the modern methods followed in its development by that Prince of Men, the late Asa S. Bushnell, Mr. Canny grew with it. The distribution system of the Company was virtually planned and constructed by Mr. Canny, whose loyalty to his employees was scarcely second to his devotion to his family. Increasing age had naturally dulled his activities—in his time no more active, athletic man lived in this section of the Buckeye State—and for the past 2 years his position on the force was altogether disconnected from field work. His widow survives him; also, 2 daughters and 4 sons."

A RATHER belated item (in that the event occurred in Geneva, N. Y., the 19th ult.), has to do with the death of Alexander Lafayette Chew. Deceased was born in New Orleans, La., October 24, 1824, acquired his education in Geneva College, returned home in 1827 and engaged in business there until 1848. In that year he returned to Geneva, married the daughter (Sarah Augusta) of the late Phineas Prouty, Sr., and engaged in the hardware business with his brother-in-law. He gradually became interested in other lines in and about Geneva, notably in the banking trade. He was one of the organizers of the Geneva Gas Company, and remained its executive head until the property was taken over by the promoters of the Interurban Gas Company. He is survived by his widow and 7 children. Of the latter, Thomas Hillhouse, is President of the First National Bank, of Rochester, N. Y.; Beverly is Vice President of the Metropolitan Trust Company, of New York; and Alexander D. is Cashier of the International Pump Company.

S. F. SHENK and associates have organized the Delphos (O.) Gas Company. It is capitalized in $40,000.

MR. C. N. LENCKSENRING has resigned from the service of the New Bedford (Mass.) Gas and Edison Light Company to assume a prominent position on the selling staff of the Clinton Motor Truck Company, of Toronto, Ontario. Prior to his leaving for his new field of work, his fellow-employees in the New Bedford Company presented him a travelling bag, that will last him for many a year.

MR. J. P. EASTMAN, formerly Superintendent of the Manitowoc (Wis.) Gas Company, is now managing the affairs of the Kelsey-Brewer syndicate, in Valparaiso, Ind.

MANAGER C. W. EYMAN, of the Boise (Idaho) Gas Company, is likely to remain in that position, despite the purchase of the named property of the Kelsey-Brewer syndicate. The new owners will spend a goodly sum in needed improvpments, the betterment work to be commenced as soon as weather conditions are satisfactory.

To avoid further complications in respect of the remaining buildings on the block on which the new office building of the Laclede Gas Company is being constructed, at 11th and Olive streets, St. Louis, the contractors have determined to sink 42 caissons, each 5 feet in diameter, spaced 13 feet apart. The average depth to bedrock is 52 feet.

The Market for Gas Securities.

The event of the week in city gas shares was the virtual placing of the shares of the New York Mutual Gas Light Company on a 10 per cent. basis, the dividend for the past 6 months having been declared at 5 per cent. The affairs of this excellently managed ally of the Consolidated Gas Company are now in better shape than in any other period of its history. To all intent and purpose it still remains a Vanderbilt property, but its management is in complete accord with that of the Consolidated. During the week no particular change occurred in quotations, the opening figure to-day (Friday) for Consolidated being identical with that of a week ago.

Brooklyn Union is nominally lower, but the quotation is rather fanciful than real, especially from the bidders point. In out-of-town shares apathy seems to rule, but quotations are notable for dullness rather than market worth. Dividends for the week include: Welsbach Company, semi-annual, 3½; American Coal Products, quarterly, 1½, and an extra of 1; Massachusetts gas, common, 1; quarterly; Michigan Light, quarterly, 1½; United Gas and Electric, semi-annual, 2½; Susquehanna Railway, Light and Power, common, quarterly, 1.

Gas Stocks.

Quotations by George W. Close, Broker and Dealer in Gas Stocks.

115 BROADWAY, NEW YORK CITY.

DECEMBER 25.

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share:

N. Y. City Companies.	*Capital.*	*Par.*	*Bid.*	*Asked*
Consolidated Gas Co.	$78,177,000	100	138½	139
Central Union Gas Co.—				
1st 5's, due 1972, J. & J.	3,000,000	1,000	103	105
Equitable Gas Light Co.—				
Con. 5's, due 1932, M. & S.	1,000,000	1,000	105	106
Mutual Gas Co.	3,500,000	100	155	165
New Amsterdam Gas Co.—				
1st Con. 5's, due 1948, J. & J.	11,000,000	1,000	100	101½
New York & Richmond Gas				
Co. (Staten Island)	1,500,000	100	35	50
1st Mtg. Gold Bds. 5 p. ct.	1,000,000	—	98½	100½
New York and East River—				
1st 5's, due 1944, J. & J.	3,500,000	1,000	103	105
Con. 5's, due 1945, J. & J.	1,500,000	—	95	100
Northern Union—				
1st 5's, due 1927, J. & J.	1,250,000	1,000	94	100
Standard	5,000,000	100	60	70
Preferred	5,000,000	100	90	100
1st Mtg. 5's, due 1930, M. & N.	1,500,000	1,000	103	105
The Brooklyn Union	15,000,000	1,000	138	142
1st Con. 5's, due 1948, M. & N.	15,000,000	—	105½	107
Yonkers	200,650	500	130	—
Out-of-Town Companies.				
Bay State	50,000,000	50	¼	⅝
" Income Bonds	2,000,000	1,000	—	75
Binghampton Gas Works	450,000	100	—	—
" 1st Mtg. 5's	500,000	1,000	97	100
Boston United Gas Co.—				
1st Series S. F. Trust	7,000,000	1,000	82	85
2d " " "	3,000,000	1,000	47½	50
Buffalo City Gas Co.	5,500,000	100	5	8
Bonds, 5's	5,250,000	1,000	59	60
Capital, Sacramento	500,000	50	—	35
Bonds (6's)	150,000	1,000	—	—
Chicago Gas Co. Guaranteed Gold Bonds	7,660,000	1,000	104	106¼
Cincinnati Gas and Electric Co.	29,500,000	100	87	90
Columbus (O.) Gas Co., 1st Mortgage Bonds	1,500,000	1,000	96	98
Columbus (O.) Gas Lt. & Heating Co.	1,682,750	100	90½	91
Preferred	3,026,500	100	75½	80
Consumers, Toronto	2,000,000	50	200	204
Consolidated, Baltimore	13,460,084	—		—
Mortgages, 5's	3,400,000	—		—
General Mortgage 4½	10,661,000	—		—
Con. Gas Co., Baltimore City, 4½	2,751,000	—		—
Consolidated Gas Co. of N. J.	1,000,000	100	15	—
Con. Mtg. 5's	976,000	1,000	92	95
Bonds	75,000	—	—	100
Denver Gas and Electric	3,500,000	—	102	105
Detroit City Gas Co.	6,580,000	—	—	50
" Prior Lien 5's	5,619,000	1,000	97	100½
Detroit Gas Co., 5's	881,000	1,000	75	80
Equitable Gas & Fuel Co., Chicago, Bonds	2,000,000	1,000	—	101
Essex and Hudson Gas Co.	6,500,000	—	125	133
Fort Wayne	2,000,000	—	—	—
" Bonds	2,000,000	—	55	—
Grand Rapids Gas Light Co., 1st Mtg. 5's	1,350,000	1,000	100	101
Hartford	750,000	25	190	200
Hudson County Gas Co., of New Jersey	10,500,000	—	130	138
" Bonds, 5's	10,500,000	—	101	106
Indianapolis	2,000,000	—	—	38
" Bonds, 5's	2,650,000	—	104½	105
Jackson Gas Co.	250,000	50	82	—
" 1st Mtg. 5's	290,000	1,000	97	100
Kansas City Gas Light Co., of Missouri	5,000,000	100	—	36
Bonds, 1st 5's	3,822,000	1,000	102	104
Laclede Gas Co., St. Louis	10,000,000	100	105	105½
Preferred	2,500,006	100	114	120
Bonds	10,000,000	1,000	102½	103
Lafayette Gas Co., Ind.	1,000,000	100	—	60
Bonds	1,000,000	1,000	60	65
Louisville	2,370,000	50	143	145
Madison Gas and Electric Co.				
" 1st Mtg. 6's	400,000	1,000	106	108½
Massachusetts Gas Companies, of Boston	25,000,000	100	90	90¼
Preferred	25,000,000	100	95½	95⅝
Montreal Gas Co., Canada	2,000,000	100	218	218¾
Nashville Gas Light Co.	1,000,000	100	110	—
Newark, N. J., Con. Gas Co.	6,000,000	—	97	98
Bonds, 6's	6,000,000	—	127	128
New Haven Gas Co.	2,000,000	25	200	—
Peoples Gas Lt. & Coke Co., Chicago	25,000,000	100	103	103½
1st Mortgage	20,100,000	1,000	—	—
2d "	2,500,000	1,000	104	—
Rochester Gas & Electric Co.	2,150,000	50	88	—
Preferred	2,150,000	50	118	—
Consolidated 5's	2,000,000	—	104¾	105½
Pacific Gas and Electric Co.	15,500,000	—	—	—
St. Joseph Gas Co.—				
1st Mtg. 5's	1,000,000	1,000	96	98
St. Paul Gas Light Co.	2,500,000	100	—	—
1st Mortgages, 6's	650,000	1,000	104	106
Extension, 6's	600,000	1,000	112½	115
General Mortgage, 5's	3,447,000	1,000	94	96
Syracuse Gas Co., N. Y.	1,975,000	100	50	55
Bonds	2,047,000	1,000	101	103
Washington (D. C.) Gas Co.	1,600,000	200	439	440
1st Mortgage, 6's	600,000	—	—	—
Western Gas Co., Milwaukee	4,000,000	—	—	—
Wilmington (Del.) Gas Co.	600,000	50	289	—

MEETING TIMES OF THE VARIOUS GAS ASSOCIATIONS.

American Gas Institute.—Annual meeting, October 16 to 18, 1912. Atlantic City, N. J. Officers: President, Ira C. Copley, Aurora, Ills. Secretary, Geo. G. Ramsdell, 29 West 39th st., N. Y. City.

Canadian Gas Association.—Annual meeting, ———— Officers: President, Arthur Hewitt, Toronto, Ont.; Secretary and Treasurer, John Keillor, Hamilton, Ont.

Empire State Gas and Electric Association.—Annual meeting, New York City, Oct. 1912. Officers: President, R. M. Searle, Rochester, N. Y.; Secretary, C. H. B. Chapin, 29 W. 39th street, New York City.

Gulld of Gas Managers of New England.—Annual meeting, March, 1912. Young's Hotel, Boston; monthly meeting, second Saturday. Officers: President, Walter G. Africa, Manchester, N. H.; Secretary, H. K. Morrison, Brockton, Mass.

Illinois Gas Association.—Annual meeting, time, March, 1912, Chicago, Ills. Officers: President, C. B. Strohn, Elgin, Ills.; Secretary-Treasurer, F. E. Newberry, Dixon, Ills.

Illuminating Engineering Society.—Annual meeting, Sept. ————1912, ———— Meetings of Sections, monthly. Pres't, A. E. Kennelly, Boston, Mass.; Secretary, Preston S. Millar, 29 W. 39th street, N. Y. City. Sections: New York, Secretary, Albert J. Marshall, 16 East 40th street. New England, Secretary, H. C. Jones, 10 High street, Boston, Mass. Philadelphia, Secretary, L. B. Eichengreen, Broad and Arch streets. Chicago, Secretary, A. L. Eustice, 105 North Wabash avenue.

Indiana Gas Association.—Annual meeting, Jan. 17 and 18, 1912, Indianapolis. Officers: President, S. E. Mulholland, Fort Wayne; Vice-President, Howard L. Olds, Indianapolis; Secretary-Treasurer, Philmer Eves, Indianapolis.

Iowa District Gas Association.—Annual meeting, time, May, ——, 1912; Lincoln, Neb. Officers: President, G. W. Clabaugh, Omaha, Neb.; Secretary and Treasurer, G. I. Vincent, Des Moines, Ia.

Kansas Gas, Water and Electric Light Association.—Annual meeting, time, Sept. 1912, Manhattan, Kas. Officers: President, B. F. Eyer, Manhattan, Kas.; Secretary and Treasurer, J. D. Nicholson, Newton, Kas.

Michigan Gas Association—Annual meeting, time, Sept. ————1912;———— Officers: President, F. W. Blowers, Kalamazoo, Mich; Secretary-Treasurer, Glenn R. Chamberlain, Grand Rapids, Mich.

Missouri Electric Light, Gas, Water Works and Street Railway Association.—Annual meeting, April, 1912; St. Louis, Mo. Officers: President, F. E. Murray, Louisiana, Mo.; Secretary and Treasurer, N. J. Cunningham, Springfield, Mo.

National Commercial Gas Association.—Annual meeting, December, 1912. Atlanta, Ga. Officers: President, C. L. Holman, St. Louis, Mo.; Secretary, Louis Stotz, 29 West 39th street, New York City.

Natural Gas Association.—Annual meeting, May, 1912, Kansas City, Mo.; Officers: President, A. B. Macbeth, Independence, Kas. Secretary, T. C. Jones, Delaware, O.

New England Gas Association.—Annual meeting, third Wednesday in February, 1912 Boston. Officers: President, J. A. Coffin, Gloucester, Mass.; Secretary-Treasurer, N. W. Gifford, East Boston, Mass.

New Jersey State Gas Association.—President, William H. Pettes, Newark, N. J.; Secretary-Treasurer, Arthur H. Osborn, Belmar, N. J.

Ohio Gas Association.—Annual meeting, February 6 and 7, 1912, Columbus, O.; President, John M. Garard, Columbus, O.; Secretary-Treasurer, T. C. Jones, Delaware, O.

Oklahoma Gas, Electric and Railway Association.—President, Noel B. Gascho, Alva Okla.; Secretary, H. V. Bozell, Norman, Okla.

Pacific Coast Gas Association.—Annual meeting, Sept. ————1912, ———— Officers: President, W. Baurhyte, Los Angeles, Cal.; Vice-President, Henry E. Adams, Stockton, Cal.; Secretary-Treasurer, John A. Britton, 445 Sutter street, San Francisco, Cal.

Pennsylvania Gas Association.—Annual meeting, York, Pa., April 8-10, 1912, Officers, President, C. W. Butterworth, Philadelphia, Pa; Secretary-Treasurer, William H. Merritt Lebanon, Pa.

Society of Gas Lighting.—Annual meeting, Dec., 13, 1912; monthly meeting, second Thursday. Place, New York City. Officers: President, Fred. S. Benson; Secretary, George G. Ramsdell, 254 West 39th street, New York city.

Southern Gas Association.—Annual meeting, April, 1912, Jacksonville, Fla. Officers, President, H. B. Hoyt, Jacksonville, Fla.; Secretary-Treasurer, E. D. Brewer, Atlanta, Ga.

Southwestern Electrical and Gas Association.—Annual meeting. April 27, 28, 29, 1912; Houston, Tex. Officers: President, J. E. Carroll, Beaumont, Tex.; Secretary, D. G. Fisher, Dallas, Tex.

Wisconsin Gas Association.—Annual meeting, May 15 and 16, 1912, Milwaukee, Wis. Officers: President, H. M. Buck, Waukesha, Wis.; Secretary-Treasurer, Henry Harmon. Milwaukee, Wis.

THE AMERICAN GAS LIGHT JOURNAL

PUBLISHED WEEKLY, AT NO. 42 PINE STREET.

VOLUME XCV., No. 1.
Whole No. 1,882.

NEW YORK, MONDAY, JULY 3, 1911.

Subscription, $3 Per Year.
$4 Canada. $5 Foreign.

INDEX TO CONTENTS, PAGE 1. - - - - - - - - ADVERTISERS' INDEX, PAGE 22.

LIBRARY OF CONGRESS
JUL 3 1911
SMITHSONIAN DEPOSIT.

Riter-Conley Manufacturing Company

STEEL CONSTRUCTION

Pittsburgh

THE UNITED GAS IMPROVEMENT COMPANY,

PHILADELPHIA.

BUILDERS OF

THE STANDARD DOUBLE SUPERHEATER

LOWE WATER GAS APPARATUS.

ACCURATE MEASUREMENT

OF

AIR AND STEAM SUPPLY

(PATENTED),

AFFORDING { PERFECT CONTROL OF GENERATOR FIRE CONDITIONS.

PRODUCING { UNIFORM RESULTS. HIGHEST EFFICIENCIES.

THE AMERICAN GAS LIGHT JOURNAL

is the OLDEST and ONLY WEEKLY GAS PAPER in America, and celebrated its Fiftieth Anniversary on July 1, 1909, issuing a special number, containing articles by the following contributors:

Helen Armstrong,
Arthur E. Boardman,
Fred. Bredel,
John A. Britton,
Thomas J. Cunningham,
Rufus C. Dawes,
Frederic Egner,
Dr. A. H. Elliott,
Philmer Eves,
W. H. Gartley,
A. F, Ganz,
R. W. Hilgenstock,
Norton H. Humphrys,
C. J. Russell Humphreys,
J. B. Howard,
Frederick J. Mayer,
Carroll Miller,
F. N. Morton,
William E. McKay,
D. McDonald,
H. Thurston Owens,
William H. Pearson,
James D. Perkins,
George G. Ramsdell,
E. P. Reichhelm,
George W. Whyte.

A few copies of this edition can be obtained for $1, or each new subscriber using blank at bottom of page will receive a copy of the Fiftieth Anniversary number and the JOURNAL for one year.

Send your subscription now. United States and Mexico, $3 per year. Canada, $4. Foreign points, $5.

AMERICAN GAS LIGHT JOURNAL,

42 PINE STREET. NEW YORK CITY:

Please enter my subscription for one year.

Name, ...

Address, ...

P. PLANTINGA, President W. E. STEINWEDELL, Secretary

THE GAS MACHINERY CO.,

Main Office and Shops

CLEVELAND, OHIO.

COAL AND WATER GAS APPARATUS.

EXHAUSTERS, CONDENSERS, SCRUBBERS,
TAR EXTRACTORS, WASHERS, PURIFIERS,
VALVES, CONNECTIONS.

BY PRODUCT MACHINERY,
COMPLETE GAS PLANTS.

SILICA BENCHES

UNCONDITIONALLy GUARANTEED.

SOME ADVANTAGES OF

SILICA RETORTS AND SETTINGS OVER CLAY.

HAVE 20 PER CENT. MORE CONDUCTIVITY,
HAVE 50 PER CENT. MORE STRENGTH,
ARE 25 PER CENT. MORE REFRACTORY,
HAVE LONGER LIFE,
HAVE GREATER CAPACITY,
ARE MORE ECONOMICAL.

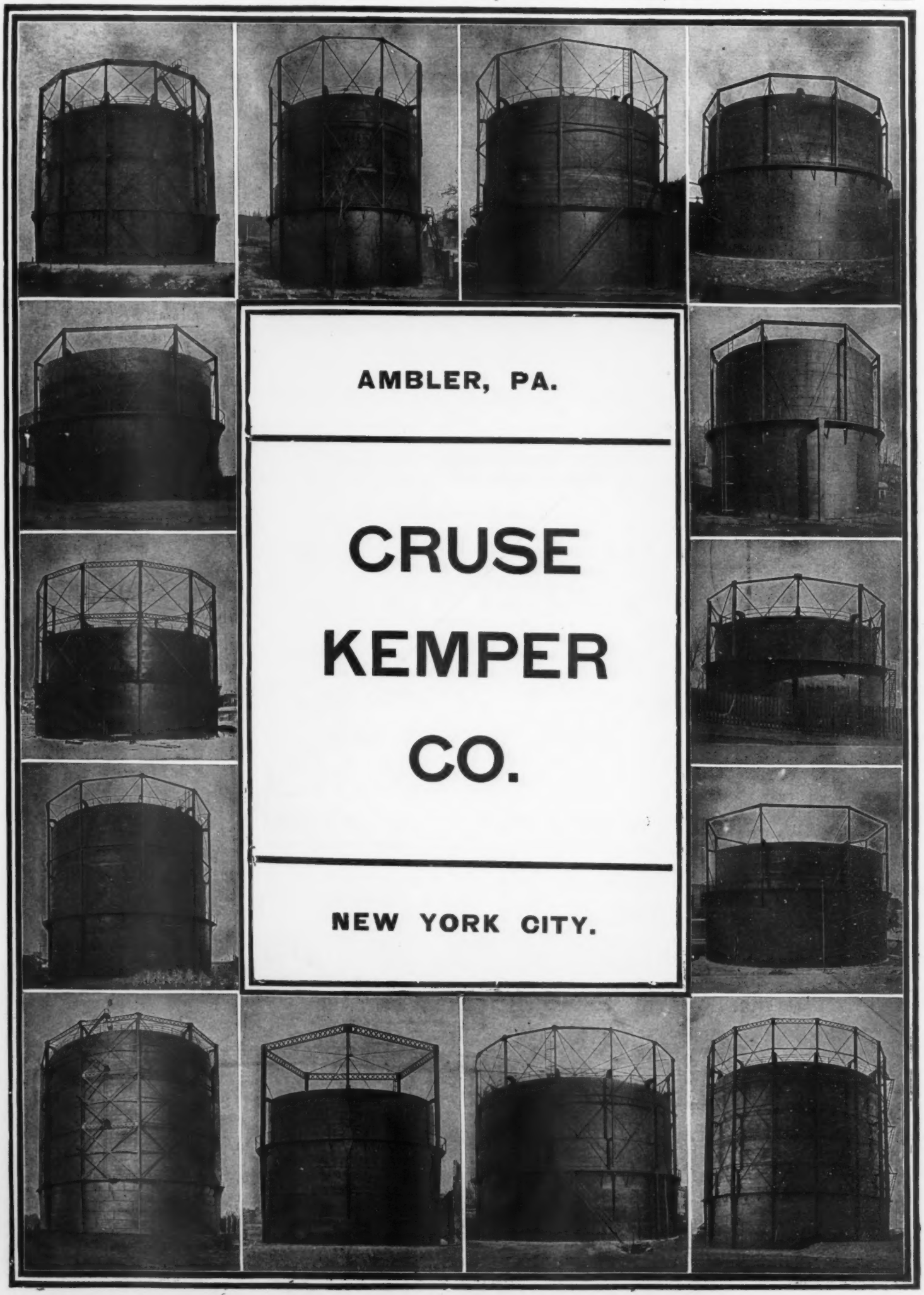
RETORTS AND SETTINGS OF BOTH SILICA AND CLAY
CARRIED IN STOCK TO FIT ANY BENCH.

WRITE US FOR PRICES AND PARTICULARS.

THE GAS MACHINERY CO.,

CLEVELAND, O.

THE GAS MACHINERY CO.
CLEVELAND, OHIO.



AMBLER, PA.

CRUSE

KEMPER

CO.

NEW YORK CITY.

LINSEED
AT
LAST!

YOU
CANNOT
DO
BETTER.

WORTH
A
DOLLAR
A
DROP.

PASTE
COSTS
A
DOLLAR
PER
GALLON.

PAINT
COTS
$1.50
PER
GALLON.

YOU
MIGHT
DO
WORSE.

ATLAS
NASHVILLE
PAINT
FOR
HOLDERS,
MACHINES,
METERS,
BRICKWORK,
MAINS.

NASHVILLE TENNESSEE
ATLAS PAINT Co
NEW YORK

A. S. B. LITTLE,
GENERAL MANAGER.

THE ATLAS PAINT CO.
NASHVILLE, TENNESSEE.

DIDIER-MARCH COMPANY,

Hudson Terminal Building,

WORKS:
Keasbey, Perth Amboy, N. J.

30 Church Street,
NEW YORK, N. Y.

DESSAU SYSTEM OF VERTICAL RETORTS,

The Only System in Successful Operation.

RECENTLY AWARDED THE GRAND PRIZE AT THE WORLD'S FAIR HELD AT BRUSSELS, BELGIUM.

First Installation in the United States of America,

PROVIDENCE, R. I., 18 BENCHES, 180 RETORTS,

Complete, with

Retort House, Coal and Coke Handling Machinery and Storage Bins.

NOW IN OPERATION.

VERTICAL RETORT BENCHES OF THE DESSAU SYSTEM WITH 5,500 RETORTS ARE NOW IN OPERATION AND IN COURSE OF CONSTRUCTION.

If You Desire to Increase Your Earning Capacity, Consult Us.

HORIZONTALS AND INCLINES OF APPROVED TYPES.

Correspondence Solicited. FREDERICK J. MAYER, General Manager.

J. S. DeHART, JR., PRESIDENT
A. F. WEHNER, SECRETARY
R. K. WEHNER, TREASURER

ISBELL-PORTER COMPANY

GAS ENGINEERS & BUILDERS OF GAS WORKS

BENCH WORK

CHARGING AND DISCHARGING MACHINERY

MACKENZIE EXHAUSTERS

PRIMARY AND SECONDARY CONDENSERS FOR FRESH OR SALT WATER

ISBELL VALVES SPECIALS

TAR EXTRACTORS

P.&A. TAR EXTRACTORS FOR WATER GAS

ROTARY AMMONIA SCRUBBERS

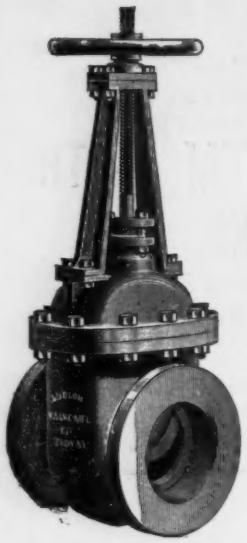
SHAVING SCRUBBERS PURIFIERS STREET GOVERNORS

MAIN OFFICE AND WORKS
BRIDGE & OGDEN STREETS
NEWARK, N.J.
ESTABLISHED 1865

The Ludlow Valve Mfg. Co.,

TROY, N. Y.

HOT GAS VALVES A SPECIALTY.



Genuine Ludlow Gate Valves,

ALL STYLES, ANY PRESSURE,

FOR

Gas, Water, Steam, Oil, Ammonia, Etc.

Send for Catalog.

BRANCH OFFICES:

New York. Chicago. Philadelphia.
Kansas City. Pittsburgh.

S. Pemberton Hutchinson, President. H. C. Adams, 1st Vice-Pres. Chas. F. Godshall, 2d V.-P. & Treas. Henry Wharton, Secretary. C. B. Nichols, Ass't Sec'y.

—THE—

WESTMORELAND COAL CO.

Chartered 1854.

Mines Situated on the Pennsylvania and the Baltimore and Ohio Railroads, in Westmoreland County, Pa.

POINTS OF SHIPMENT:

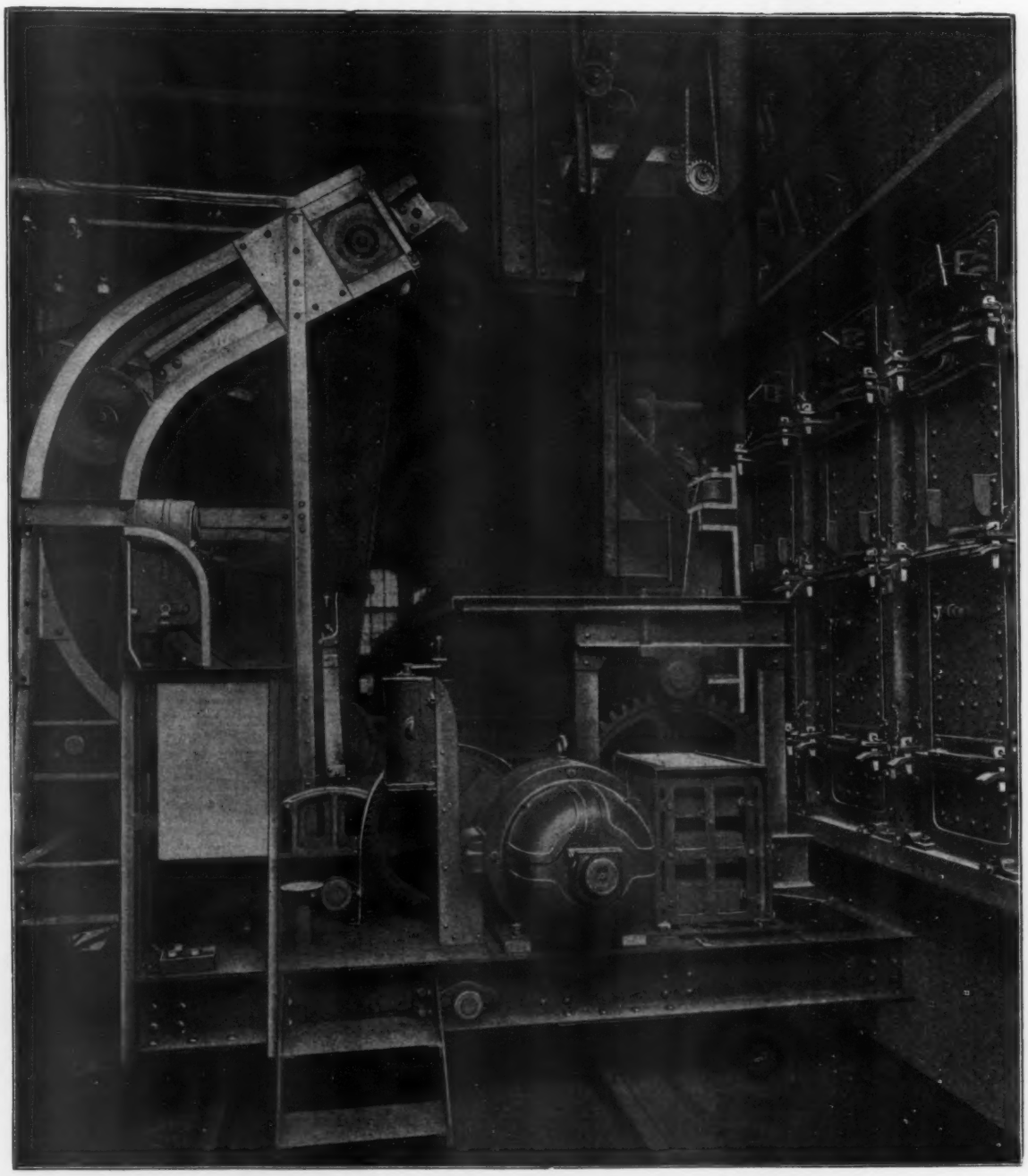
PHILADELPHIA, BALTIMORE, SOUTH AMBOY, N. J., WATKINS (SENECA LAKE), N. Y.

Since the commencement of operations by this Company its well-known Coal has been largely used by the Gas Companies of New England and the Middle States, and its character is established as having no superior in gas-giving qualities, and in freedom from sulphur and other impurities.

Principal Office, 224 South 3d St., Philadelphia, Pa.

A MOTOR-DRIVEN PUSHER.

For Discharging Coke From A Chamber Oven.



Equipp'd with Leveling Plow to Insure Even Distribution of Charge.

EXTRACTS FROM A PAPER PREPARED FOR THE ILLINOIS GAS ASSOCIATION.*

"The Special Features of the Process Finally Developed Included:

1. Carbonizing of coal in bulk and saving in ground space,
2. Saving in labor and elimination of night work, excepting for firing of the generators, which is done every 6 hours by 1 man.
3. Moderate heats, with attendant saving in maintenance costs.
4. Elimination of standpipe troubles and pitch in hydraulic.
5. Good yield and heating value of gas, with freedom of carbon deposits in the chambers,
6. Liquid tar—low in carbon.
7. Mechanical means of regulating texture of coke."

* Paper by Mr. J. C. Markley.

The National Chamber Oven Co.,

CINCINNATI.

BERWIND-WHITE COAL MINING COMPANY'S

Ocean Westmoreland Gas Coal.

Offices:
Washington Building, New York.
Arcade Building, Philadelphia.

STRICTLY High Grade. . . . .
Carefully Prepared.
For Gas Making or
Heavy Steaming.

A. C. M. AZOY,
General Agent and Manager Gas Coal Department,
No. 1 Broadway, New York.

Bronder Patent Stoking Machinery.

Three-Scoop and Three-Rake Charging and Discharging Machines are operating in New York, Newark, N. J., Philadelphia, Worcester, Mass., Mt. Vernon, N. Y., Toronto and Montreal, Canada, Detroit, Seattle, Rochester and St. Louis.

Four-Scoop and Four-Rake Charging and Discharging Machines are operating in Detroit, Mich., and Cincinnati, Ohio. These are the only machines that will draw or charge simultaneously 3 or 4 retorts (vertically) and handle from 42 to 60 retorts in from 25 to 30 minutes, lid opening and closing and filling of furnaces included.

Hot Coke Conveyor, Quencher and Steam Exhauster, operating in Toronto, Canada, working in water-sealed flue, rollers being protected from heat and grit.

COAL CRUSHERS, CONVEYORS AND BINS. TURNTABLES FOR MACHINES.

Labor-Saving Machines for Handling Coal and Coke from Coal Cars to Coke Yard or Bins. Coke Screening and Measuring Plants a Specialty.

G. A. BRONDER,
Contracting Engineer and Builder,
809 BROADWAY, NEW YORK.

KERR MURRAY MANUFACTURING COMPANY,

Engineers and Manufacturers

APPARATUS FOR COAL GAS PLANTS,

SINGLE AND DOUBLE-LIFT GASHOLDERS
AND STEEL TANKS,

Latest Improved

ROTARY EXHAUSTERS, P. & A. TAR EXTRACTORS, AMMONIA WASHERS,

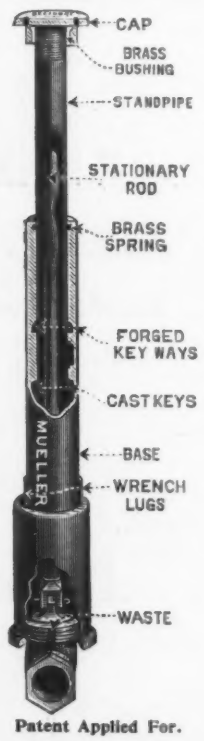
CONDENSING, SCRUBBING AND PURIFYING APPARATUS.

Street Specials and Valves.

ADDRESS:

KERR MURRAY MANUFACTURING COMPANY, {FORT WAYNE, IND.

Sectional Mueller Extension Service Box.



Patent Applied For.

You Could Do Lots Worse But No Better

Than to adopt the Mueller Extension Service Boxes.

Get this point. The brass bushing is placed in the cap, flange end up, and iron cast all around it. There is no getting it out *except by actual destruction of the cap.*

And the cap can't be removed except with a spanner wrench. These extension boxes are made for regular and Minneapolis curb cocks and are Unconditionally Guaranteed.

Ask for literature and prices.

TRADE MARK
MUELLER
REGISTERED

H. MUELLER MFG. CO.

Works and General Offices,
DECATUR, ILL., U. S. A.
West Cerro Gordo St.

Eastern Division,
NEW YORK, N. Y., U. S. A.
254 Canal St. (cor. Lafayette).

Exterior Mueller Extension Service Box.

Patent Applied For.

"BROWNHOIST"

Locomotive Cranes and Grab Buckets.

Our cranes and grab buckets are being used extensively by heat, light and power companies for handling coal, coke, ashes, and other loose materials. The bucket can be quickly replaced by the bottom block, which will handle any miscellaneous material, such as lumber, machinery, structural material, etc.

Result in a Large Decrease in Your Handling Expenses.

Requires small yard space.
Operated by one man.
Built for any gauge track.
Will do your switching of cars.
Small operating and "upkeep" expense.
Equipped with the steam brake.

Write us to-day and we will send our catalogs to you.

THE BROWN HOISTING MACHINERY COMPANY,

Main Office and Works: CLEVELAND. Branch Offices: NEW YORK, PITTSBURG.

R. D. WOOD & CO.,

400 CHESTNUT ST., PHILADELPHIA,

MANUFACTURERS OF

Cast Iron Pipe.

HEAVY LOAM CASTINGS,

Dunham Specials,

Hydraulic Work,

LAMP POSTS, VALVES, ETC.,

Power Plants with Producers.

BUILDERS OF

Gasholders.

Single or Multiple Lifts, with or without Metal Tanks.

PURIFIERS, CONDENSERS, SCRUBBERS, BENCH WORK.

Cutler's Patent Freezing Preventer for Holder Cups.

Established 1858. Incorporated 1890.

CHAS. E. GREGORY, Prest. DAVID R. DALY, V.-Prest. & Treas. H. D. ABERNETHY, Sec.

J. H. GAUTIER & CO.,

Greene and Essex Sreets, Jersey City, N. J.,

—MANUFACTURERS OF—

CLAY GAS RETORTS, FIRECLAY TILES, FIRE-BRICK AND FIRECLAY SPECIALTIES.

Ground Fireclay, Fire Sand and Ground Firebrick in Barrels and Bulk.

—SOLE MANUFACTURERS OF—

THE FLEMMING GENERATOR GAS FURNACE.

"BEST BY TEST."

ESTABLISHED 1868.

BALTIMORE RETORT & FIRE BRICK COMPANY.

COAL GAS BENCHES.

HORIZONTAL RETORTS.
INCLINED RETORTS.
VERTICAL CHAMBERS.

IN THE BUSINESS SINCE 1857.

Evens & Howard Firebrick Co.

920 Market Street, Saint Louis,

MANUFACTURERS of HIGH-GRADE FIRECLAY MATERIALS,

GAS BENCHES:

Half-Depth, Full Depth and Combination.

RETORTS -- SETTINGS -- WATER GAS LININGS.

All Standard Material in Stock for Prompt Shipment.

Estimates Furnished on Special Work as well as Standard Construction.

WRITE US.

THOS. D. MILLER, Manager Gas Division.

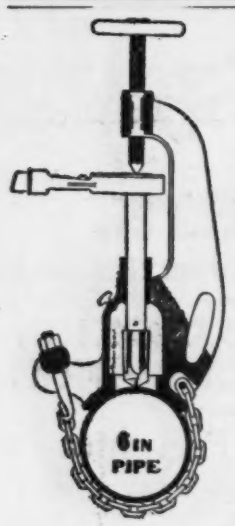
GAS BENCHES, RETORTS, SETTINGS

We spare no expense to turn out highest grade work, and we can refer you to superintendents of gas plants all over America for actual experience in regard to the durability and high efficiency of our benches and settings.

We solicit your business on the grounds of economy of operation, high quality of material, low cost of repairs and fair treatment.

Let us figure on your requirements. Drawings of any of our various styles of settings and estimates for bench work will be furnished upon request.

LACLEDE-CHRISTY CLAY PRODUCTS CO., ST. LOUIS, MISSOURI.



MACHINES

—FOR—

Drilling and Tapping Pipe Under Pressure

WITHOUT ANY ESCAPE OF GAS.

They are Strong and Compact.

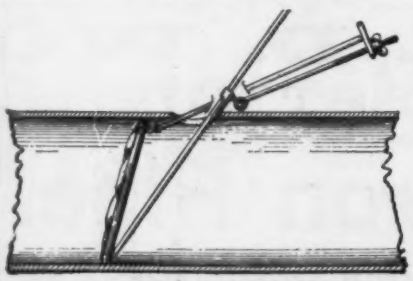
Size of Combination Drills and Taps, ¾ to 4-inch.

Machines Sent to any Gas Company for Thirty Days' Trial.

Send for Circulars.

GEORGE LIGHT,

DAYTON, O.



GOODMAN STOPPER

The Half Minute

GAS MAIN SHUT-OFF

Manufactured and Sold by Safety Gas Main Stopper Co. 257-263 E. 133d St., New York.

AGENTS.

Pacific Coast—VAN E. BRITTON, 269 Monadnock Building, San Francisco, Cal.

Great Britain—PARKER & LESTER, Ormside Street, Old Kent Road, London, S. E.

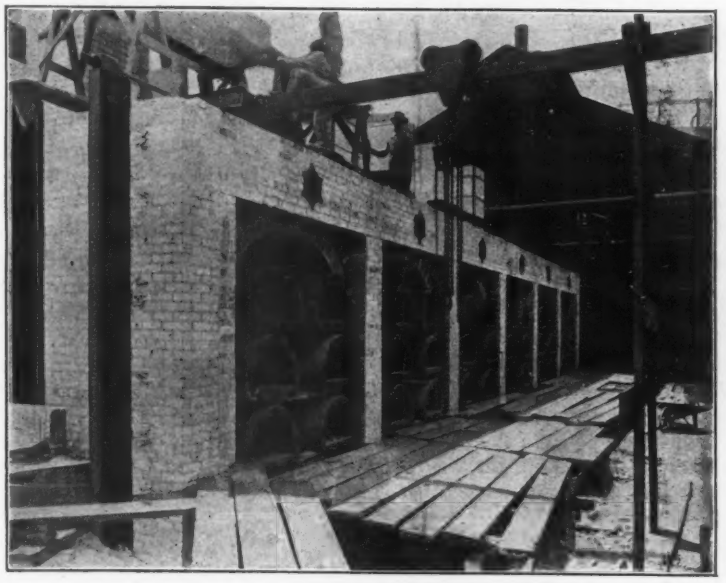
WHAT IS YOUR GAS COST?

If a careful examination of your monthly reports shows that you have reached the lowest limit of cost with your present plant, you should seriously consider Doherty Economizer Benches.

We have a fund of information on low cost gas manufacture which is the result of a wide experience.

As combustion engineers, it is our business to know the economies of gas making.

Perhaps we can help you increase your earnings.



THE IMPROVED EQUIPMENT COMPANY,

ENGINEERS DESIGNERS BUILDERS

EXECUTIVE AND SALES OFFICES: 60 Wall Street, NEW YORK.

Sole Agents for the Dessau System of Vertical Retorts for Michigan, Ohio, Kentucky, Tennessee, Mississippi and All States West of These.

THE PARKER-RUSSELL MINING AND MFG. CO.,

St. Louis, Mo., 500-508 Liggett Bldg. New York Office, 45 Broadway.

GAS RETORT BENCHES, Horizontals, Verticals, Inclines.
Longest Life---Largest Output per Retort---Lowest Fuel Results---Greatest Ease of Operation.
WATER GAS LININGS.
STOKING MACHINES, FIDDES-ALDRIDGE DISCHARGING CHARGER.
WOODALL-DUCKHAM, CONTINUOUS SYSTEM OF VERTICAL RETORTS.
LARGE STOCK OF RETORTS AND SETTINGS ON HAND.
ALL OUR WARES ARE MANUFACTURED AT OUR OWN PLANT FROM CLAYS MINED FROM OUR OWN MINES.
All Contracts Made as of St. Louis. Correspondence Solicited.

JOHN DELL,
President and General Manager.

MISSOURI FIRE BRICK CO.,

ESTABLISHED 1882.

MANUFACTURERS OF

Gas Retorts, Bench Settings, Fire Brick, Cupola Linings, Etc.

We are the **Exclusive Agents** *for the* **Mitchell Patent Benches,** *Constructed with Half or Full Depth Furnaces, to Burn either Coal or Coke, and Arranged for Front or* **Rear Clinkering.** **The Mitchell** *is the* **Original Coal Firing Bench.** *We also Erect Plain Benches with* **One** *to* **Six Retorts.**

YOUR CORRESPONDENCE IS RESPECTFULLY SOLICITED.

City Office: *411 Olive Street, Continental Bank,* ST. LOUIS, MO.

GEROULD'S IMPROVED RETORT CEMENT.

A Cement of great value for patching retorts, putting on mouthpieces, making up all bench-work joints, lining blast furnaces and cupolas. This cement is mixed ready for use. Economic and thorough in its work. Fully warranted to stick.

Price List, f.o.b. NEW CASTLE, PA.

In Casks, 400 to 800 pounds, at 5 cents per pound.
In Kegs, 100 to 200 " " 6 " "
In Kegs less than 100 " " 7 " "

C. L. GEROULD,
29 North Mill St., New Castle, Pa.

GEORGE ORMROD, Pres. & Treas. JOHN D. ORMROD, Supt. J. G. EBERLEIN, Sec'y.

EMAUS PIPE FOUNDRY,

DONALDSON IRON COMPANY, - - - - EMAUS, PA.

CAST IRON GAS & WATER PIPE

MANUFACTURERS OF

Cast Iron Pipe and Special Castings

FOR WATER AND GAS, also FLANGE PIPE, LAMP POSTS, Etc.

What Do You Do When You Lose The Juice?

"Quit."

You bet you do. And it often costs you dollars and dollars to have your access to upstairs interrupted.

And the worst of it is your electric elevators not only often "lose the juice," but they are a constant menace of fire.

And their existence is usually just "one thing after another."

And the "old man," he pays the freight.

Well, we have changed all that with the wonderful Steam Hydraulic.

Say, did you ever know this: **The Bureau of Engraving and Printing at Washington** got a lot of Steam Hydraulics, used them three years and never had to touch them. And here the other day come to us to change their other electrics to the Steam Hydraulics.

Didn't know it—well, well!

Why, bless your dear old heart, the **Consolidated Gas Co**; **International Harvester Co.**; **Proctor & Gamble,** the Ivory Soap folks; **Gluett, Peabody & Co**, the Arrow Collar folks; **United States Steel Co.**; **Packard Motor Car Co.**; **John V. Morrell Co.**; **Remington Typewriter Co.**, and dozens and dozens of the best concerns all over the land, are getting these wonderful elevators.

You'd better find out what it means to

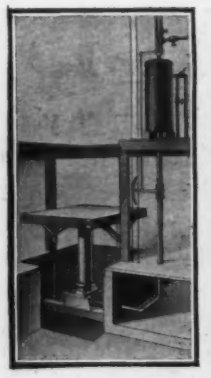
"Hook 'er to the Biler."

CRAIG RIDGWAY & SONS,

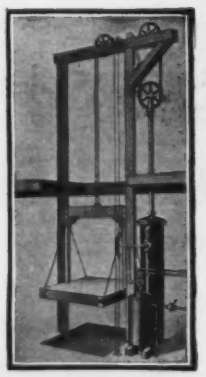
COATESVILLE, PA.,

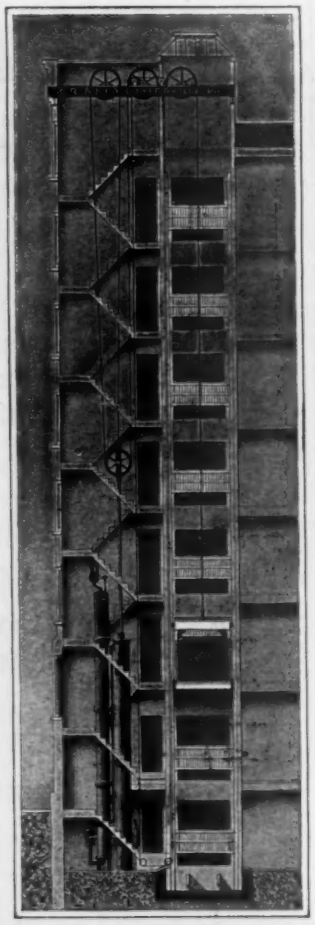
ELEVATOR MAKERS TO FOLKS WHO KNOW.

SEND FOR BULLETIN.

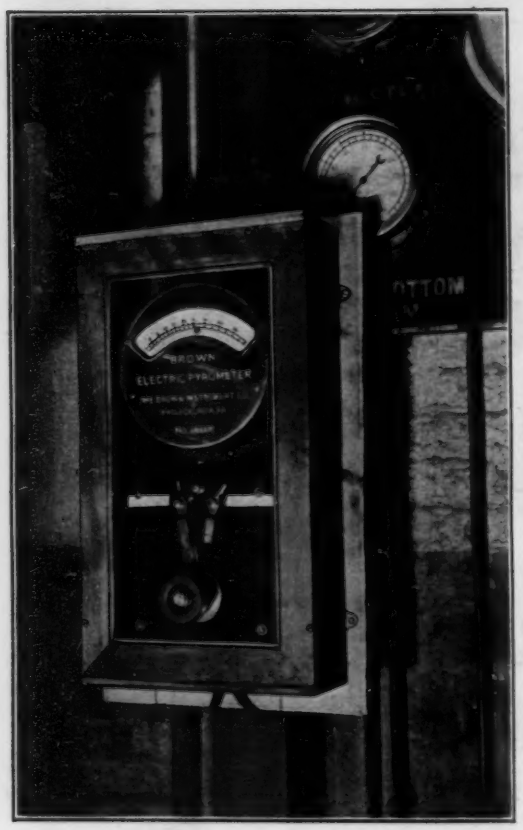


THE GAS MAN'S PET.





BROWN PYROMETERS



have been particularly designed for severe usage on Water Gas Machines.

Can we send a catalog describing this instrument?

THE BROWN INSTRUMENT CO.,

PHILADELPHIA, PA.

BRANCHES:

PITTSBURG,
CHICAGO.

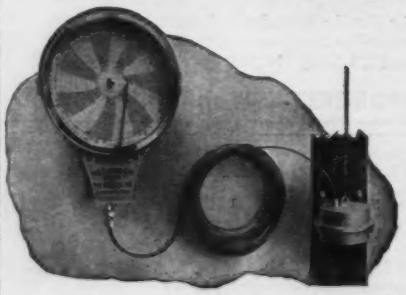
LLOYD CONSTRUCTION COMPANY

GAS APPARATUS.

DETROIT – MICHIGAN

BRISTOL'S RECORDING INSTRUMENTS

FOR PRESSURE, TEMPERATURE AND ELECTRICITY.



The most complete line of Recording Instruments in the world.

Thousands in daily service.

Help to maintain uniform operating conditions.

Write for new 64-page Illustrated Bulletin No 160, which is a condensed general catalogue of Bristol's Instruments.

THE BRISTOL COMPANY, Waterbury, Conn.

BRANCH OFFICES, - New York, Pittsburg, Chicago.

DEILY & FOWLER MFG. CO.,

39 Laurel Street, Philadelphia, Pa.

ESTABLISHED 1842. INCORPORATED 1908.

BUILDERS OF

GASHOLDERS,

Single-Lift or Telescopic,

With or Without Steel Tanks.

Oil Storage Tanks, Water Tanks, Etc.

ESTIMATES CHEERFULLY FURNISHED.

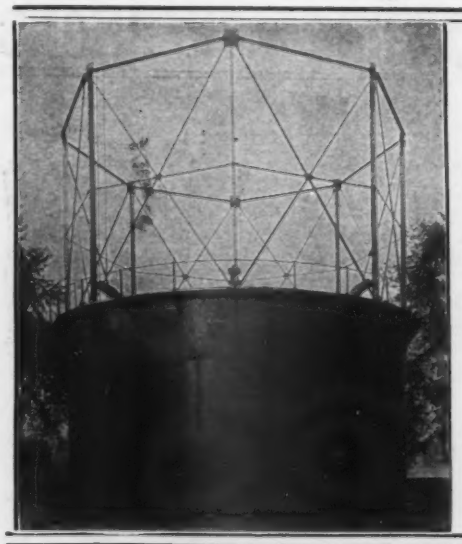
CORRESPONDENCE SOLICITED.

DAVIS & FARNUM MANUFACTURING CO.,

Waltham, Mass.

GAS HOLDERS

Steel Tanks for Naptha Storage, Machinery for Coal and Water Gas Plants.



GAS HOLDERS,

WATER TOWERS, STANDPIPES, OIL TANKS, SCRUBBERS, SMOKE STACKS.

CHICAGO BRIDGE & IRON WORKS.

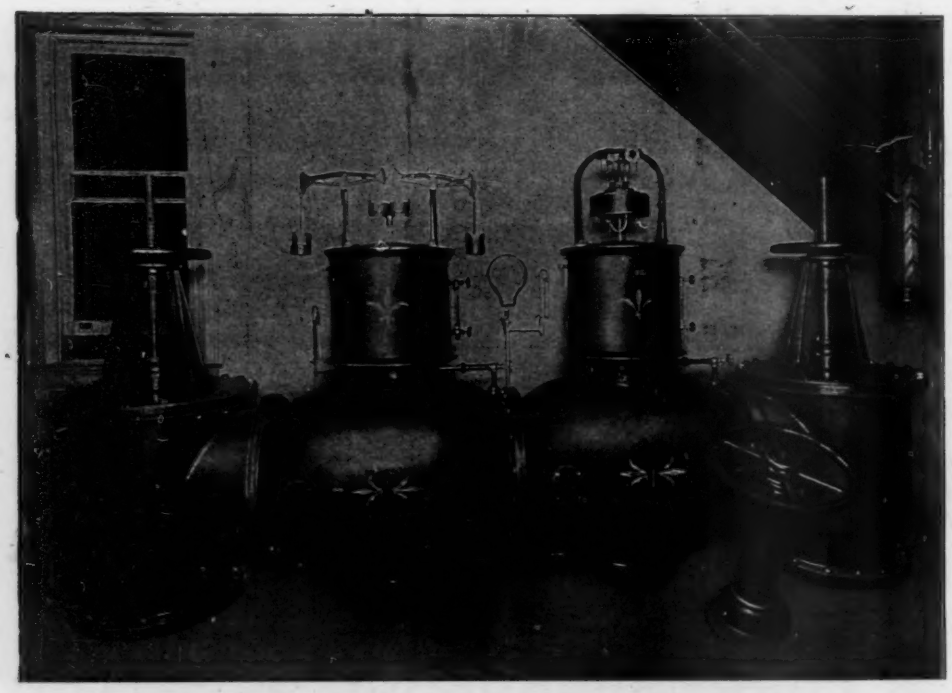
Offices, { 105th and Throop Streets, Chicago.
No. 30 Church Street, New York, N. Y.
Praetorian Building, Dallas, Tex.
Greenville, Pa.

Shops, { Chicago, Ill.
Greenville, Pa.

BROWN'S DIRECTORY OF GAS COMPANIES, 1911.

PRICE, $5. For Sale by

AMERICAN GAS LIGHT JOURNAL, 42 Pine St., New York City.



CONNELLY IRON SPONGE & GOVERNOR COMPANY,

Automatic, Balance, High Pressure Governors,
Service Governors,
Smokeless Tar Burning System,
Exhausters,
Iron Sponge,
Purifying Material,
Revivifying Apparatus,
Unison Telemetric Pressure Gauges,
Photometers,
Tar Extractors and Separators,
Sulphur Testers,
Specific Gravity Testers,
Siphon Pressure Gauges,
Gas Helmets,
First Aid to Injured,
Meter Reading Lamps,
Trouble Lamps,
Gas Lighters,
Thermometers,
Anything Used in the Gas Industry.

127 DUANE ST., - NEW YORK CITY.
1000 WEST 22D ST., - CHICAGO, ILL.

PACIFIC COAST AGENT:
VAN E. BRITTON, SAN FRANCISCO, CAL.

12-Inch High Pressure Governor

REYNOLDS' GAS REGULATOR COMPANY,

ANDERSON, IND., U. S. A.

We make all sizes for all classes of reduction,

Double and Single District Stations,

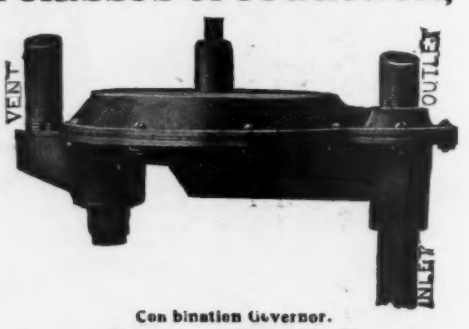
And Individual Service Governors for Reducing High Pressure.

HOLDER GOVERNORS

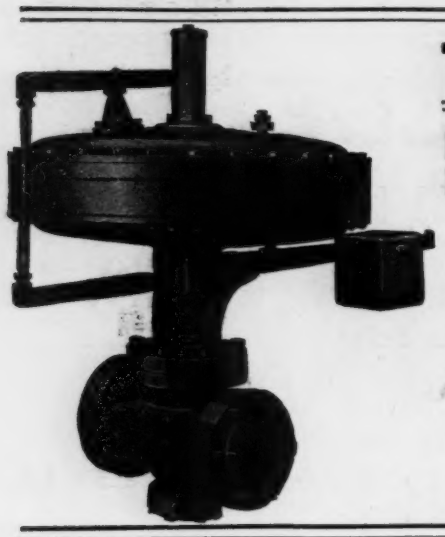
And Low Pressure Regulators, all of the Dry Diaphragm type.

English Agents:
THE BRYAN DONKIN CO., LTD., Chesterfield, England.

Write for Catalog.



Combination Governor.
(Governor and Mercury Seal.)



THE FULTON GAS PRESSURE GOVERNORS

For Artificial or Natural Gas.
For District or Individual Service.

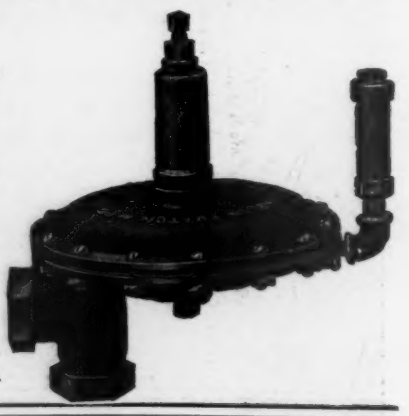
Our Improved **Duplex Sensitive Governor** for district service will reduce high pressure gas to inches of water without variation. Absolutely safe and reliable. No complicated mechanism to get out of order. No auxiliary regulators to assist the main governor required. The most simple and perfect governor ever placed on the market. We also manufacture Reducing Governors for any inlet or outlet pressure.

See our high pressure Service Governor with safety valve and automatic cut-off.

More than 20 years' experience with the largest gas companies. Send for catalog.

THE CHAPLIN-FULTON MFG. CO., PITTSBURGH, PA.

VAN E. BRITTON, Pacific Coast Agent, Monadnock Bldg., San Francisco, Cal.



PETER YOUNG, President.
Works:
LOCKPORT STATION, PA.

ESTABLISHED 1864.

JAMES GARDNER, JR., CO.,

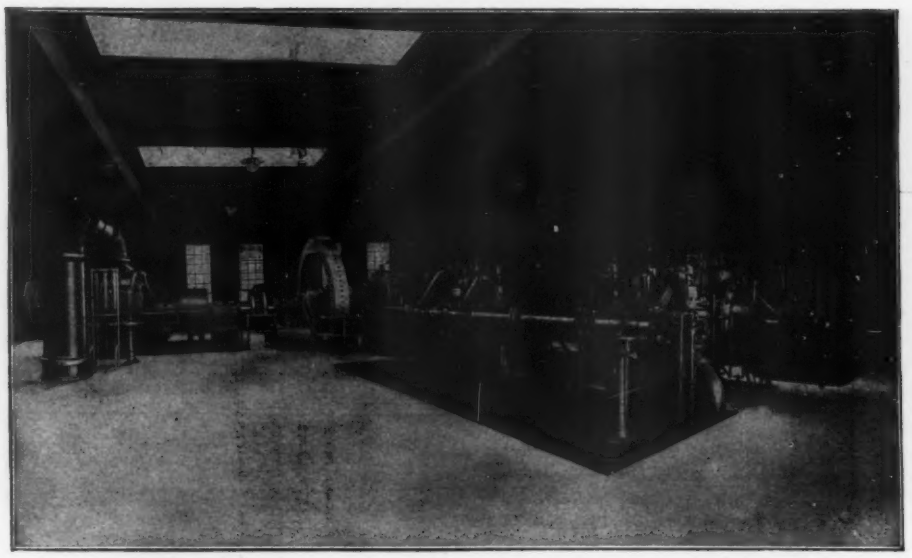
Successor to WILLIAM GARDNER & SON.

N. A. YOUNG, Secretary and Treasurer.
Address all Communications to
JAMES GARDNER, JR., CO., Bolivar, Pa.

Fire Clay Goods for Gas Works.

ROOTS' EXHAUSTERS.

A half century of experience, up-to-date engineering and shop facilities embodied in these **World Famous Gas Exhausters.**



An Installation for the Peoples Gas Light and Coke Co,, Chicago, Ill., handling 1,000,000 cu, ft. per hour, under six (6) pounds per square inch.

P. H. & F. M. ROOTS COMPANY.

HOME OFFICE: Connersville, Ind. **NEW YORK OFFICE: 120-122 Liberty St.** **CHICAGO OFFICE: 1547 Marquette Bldg.**

SEND FOR POCKET EDITION OF "ENGINEERS' PRACTICAL REFERENCE BOOK."

The only positive insurance against leaks in gas mains is

LEAD WOOL.

Composed of fine, long fibers of **lead,** it allows of calking the **whole depth** of the **joint** from the yarn up. No melting pots required; it is applied **dry.** Best possible references. **Drop us a line** for samples and circulars.

NEW YORK LEAD WOOL COMPANY,

93 NASSAU STREET, NEW YORK CITY.

SOUTH CHESTER TUBE COMPANY,

CHESTER, PA.

WROUGHT IRON LINE AND DRIVE PIPE, TUBING AND CASING.

Our Line Pipe is strictly and solely Wrought Iron, insuring long life and high resistance to corrosion.

Each coupling is threaded to a taper and the ends of each length of pipe are equipped with taper threads to exactly conform to the taper in the coupling. Ends of pipe are reamed and the couplings are recessed to cover the last thread on the pipe, adding strength and protection to the weakest point.

The only way to obtain satisfactory joints is to have taper on both pipe and coupling to lock threads.

P. N. GUTHRIE, JR., Sales Agent. - 30 Church St., New York City.

THE BARTLETT HAYWARD CO.

ENGINEERS & FOUNDERS.

BALTIMORE. NEW YORK.

COAL & WATER GAS PLANTS

GAS HOLDERS

DISCHARGING SIDE F INCLINED RETORTS.

Western Representative—W. A. BAEHR Peoples Gas Building, Chicago.

FINANCIAL NOTICES.

DIVIDEND NOTICE.

OFFICE OF THE UNITED GAS IMPROVEMENT CO., N. W. CORNER BROAD AND ARCH STS., PHILADELPHIA, June 14, 1911.

The Directors have this day declared a quarterly dividend of 2 per cent. (one dollar per share), payable July 15, 1911, to stockholders of record at the close of business, June 30, 1911. Checks will be mailed.

1880-4 LEWIS LILLIE, Treasurer.

POSITIONS WANTED.

Either as MANAGER or SUPERINTENDENT of a gas plant, preferably the former. Has an intimate knowledge of modern accounting methods and is thoroughly familiar with the management of men and the conducting of an office. Nearly 20 years in the business, and can furnish any references required.

1878-tf Address, "F. H. W.," care this Journal.

As MANAGER or SUPERINTENDENT of a gas company, thoroughly familiar with manufacture, distribution, meters, sales and modern systems of accounts. Good references from present employers.

Address, "F. A. E.,"

1881-3 Care this Journal.

CHEMIST; university graduate; seven years' experience; thoroughly familiar with all phases of gas works' chemistry; competent to take charge of laboratory for large company.

Address, "GRADUATE,"

1880 eot Care this Journal.

POSITIONS OPEN.

Wanted, ASSISTANT SUPERINTENDENT in a growing gas company, located in Middle States. Applicant should have knowledge of electricity. State prior positions, references and salary expected.

Address, "ASSISTANT,"

1882-2 Care this Journal.

Wanted, MANAGER for a water gas plant in a growing town of 5,000 in the Middle West. Party must be willing to invest $3,500 in the securities of the company. This is a good proposition for a live and up-to-date man.

Address, "INVESTMENT,"

1881-4 Care this Journal.

MISCELLANEOUS.

FOR SALE,

One 6-Foot United Gas Improvement Water Gas Set,

Complete, which is sold for the purpose of making room for a larger installation. The set is in perfect working order and prices will be quoted upon application. NEW BEDFORD GAS AND EDISON LIGHT CO., New Bedford, Mass.

1864-tf

Utilize Your Gas Liquor.

NO EXTRA LABOR OR OPERATING EXPENSES.

IMPROVED AMMONIA CONCENTRATOR.

About 130 in use. Write to

STROH & OSIUS, Patentees, or

MICHIGAN AMMONIA WORKS, - Detroit, Mich

The Light, Heat & Power Corporation, Boston

CONTRACTING ENGINEER

Electric Light and High Pressure Gas Plants. Equipment, Material and Supplies.

131 State Street, Boston, Mass.

Cable Address. "LIHEPOWCO." Code, LIEBERS'.

BOOKS FOR GAS MEN.

MOTION STUDY, by Frank B. Gilbreth. 135 pages. Illustrated. Price, $2.

LIQUID AND GASEOUS FUELS, by Vivian B. Lewes. 334 pages. Price, $2.

THE GAS ENGINE, by Forrest R. Jones. 447 pages and 142 cuts. Price, $4.

HEATING, by W. J. Baldwin. Price, $2.5 0.

PUBLIC LIGHTING BY GAS and ELECTRICITY, by W. J. Dibdin. 528 pages. About 150 illustrations. Price, $8.

AUDEL'S GAS ENGINE MANUAL. 469 pages. 156 illustrations. Price, $2.

GAS MANUFACTURE, by W. J. A. Butterfield. Price, $2.50.

HANDBOOK ON GAS ENGINES, by G. E. Lieckfeld, C.E. Translated by George M. Richmond, M.E. Price, $1.

GAS AND GAS WORKS, by Hughes and O'Connor. Price, $2.50.

PRACTICAL TESTING OF GAS AND GAS METERS, by C. H. Stone. Price, $3.50.

GAS ENGINE THEORY AND DESIGN, by A. C. Mehrtens. 256 pages. 241 illustrations. Price, $2.50.

THE DISTRIBUTION OF GAS. by Walter Hole. 2d edition. Illustrated. Price, $7.50

MODERN RETORT SETTINGS, by G. P. Lewis. Price, $1.50.

ART OF ILLUMINATION, by Dr. Louis Bell. Price, $2.50.

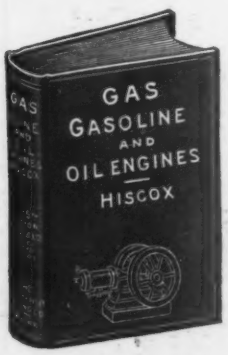
GAS COMPANIES' BOOKKEEPING by Brearley and Taylor. Price, $4.50.

THE MACBETH CALORIMETER for the Sotion of Every Illumination Calculation. Price, $6.50.

RADIATION, LIGHT & ILLUMINATION, by Dr. C. P. Steinmetz. 200 pages. 127 illustrations. Price, $3.

For Sale by

AMERICAN GAS LIGHT JOURNAL. 42 Pine St., N. Y. City.



JUST PUBLISHED, 15TH EDITION, REVISED, ENLARGED AND RESET.

Gas, Gasoline and Oil Engines,

INCLUDING GAS PRODUCER PLANTS,

By GARDNER D. HISCOX, M.E.

Author of "MECHANICAL MOVEMENTS," "COMPRESSED AIR," Etc.

PRICE, - - - - - $2.50.

The only complete American book on the subject for Gas Engine Owners, Gas Engineers and intending purchasers of gas engines, treating fully on the construction, installation, operation and maintenance of gas, gasoline, kerosene and crude petroleum engines.

The new rewritten, enlarged and revised 15th edition of this work has been prepared to meet the increasing demand for a thorough treatise on the subject. Its 450 pages give general information for everyone interested in this popular motive power and its adaptation to the increasing demand for a cheap and easily managed motor requiring no licensed engineer. It is fully illustrated by 351 Engravings and Diagrams. For sale by

A. M. CALLENDER & CO., - - - - - 42 Pine Street, New York City.

Gas Companies' Bookkeeping,

1906 EDITION,

By JOHN H. BREARLEY and BENJAMIN TAYLOR.

A Practical Treatise on the Keeping of Gas Companies' Accounts,

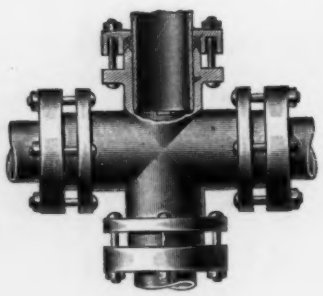
WITH USEFUL

FORMS FOR GAS UNDERTAKINGS.

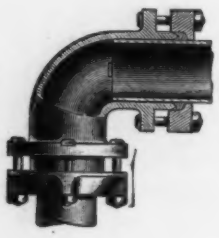
PRICE, CLOTH, $4.50, MOROCCO, $6.50.

FOR SALE BY

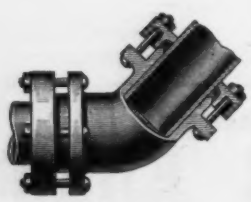
AMERICAN GAS LIGHT JOURNAL, 42 Pine St., New York City.



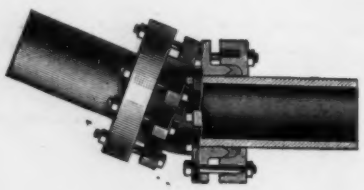
Crosses.
Style 17.



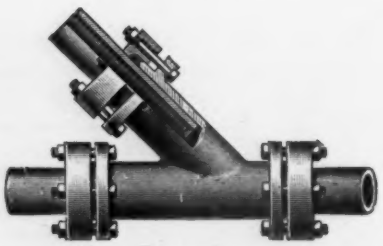
Ells.
Style 15.



Angle Ells.
Style 16.



Angle Couplings.
Style 28.

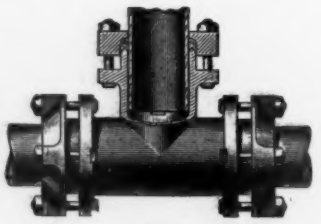


Y's--Branches 45°.
Style 29.

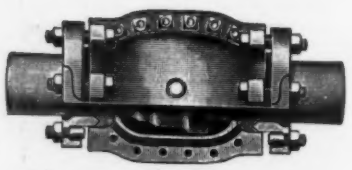
A Few Dresser Specialties for which all Gas Companies have use.

Makers of High-Grade Pipe Couplings, Sleeves, Clamps and Fittings.

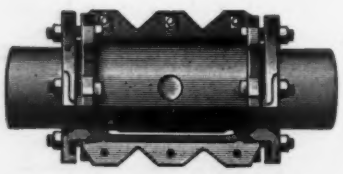
Send for Catalogue and State Requirements.



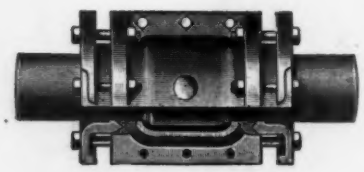
Tees.
Style 18.



Heavy Split Sleeve for Cast Iron Pipe.
Style 26.



Light Split Sleeve for Cast Iron Pipe.
Style 27.



Light Split Sleeve for Wrought Iron Pipe.
Style 13.

S. R. DRESSER MFG. CO.,

BRADFORD, PENNA.,

U. S. A.

NOW READY.

Distribution by Steel,

— BY —

HENRY WOODALL, M. Inst. C.E.,

— AND —

B. R. PARKINSON, A.M.I.Mech.E.

A Book which deals with Mainlaying exclusively by Steel Tubes.

Illustrated by reproductions of many photographs of work in progress and by diagrams and tables.

Contains a useful chapter on the testing of low pressure gas mains for leakage.

Thoroughly indexed for reference.

PRICE, $2.50. FOR SALE BY

AMERICAN GAS LIGHT JOURNAL, 42 Pine St., New York City.

PRACTICAL HANDBOOK ON

GAS ENGINES,

With Instructions for Care and Working of the Same,

By G. LIECKFELD, C.E.

Translated with Permission of the Author, GEO. M. RICHMOND, M.E.

PRICE, $1.00.

For Sale by

AMERICAN GAS LIGHT JOURNAL, 42 Pine Street, New York City.

NOW ON SALE. NEW EDITION IN CLOTH COVERS.

COX'S LOW PRESSURE COMPUTER, - - - Price, $2.50.
COX'S HIGH PRESSURE COMPUTER, - - - - - - 5.00.

SEND P. O. ORDER OR CHECK TO

AMERICAN GAS LIGHT JOURNAL, 42 Pine St., New York City.

ALPHABETICAL LIST OF ADVERTISERS.

New Advertising, or Changes in Standing Ads., to insure attention the issue following their reception, Must be in Hand on Wednesday.

American Gas Furnace Co. ... 31
American Gas Light Co. ... 37
American Meter Co. ... 35
Atlas Paint Co. ... 6

Baehr, Wm. A. ... 24
Baltimore Retort and Firebrick Co. ... 12
Bartlett-Hayward Co. ... 18
Berwind-White Coal Mining Co. ... 10
Bredel Co., Fred. ... —
Bristol Co. ... 14
Bronder, G. A. ... 10
Brown Hoisting Machinery Co. ... 11
Brown Instrument Co ... 14
Burnham, R. E ... 24
Byllesby & Co., H. M. ... 25

Cabot Mfg. Co. ... 31
Chaplin-Fulton Mfg. Co ... 16
Chicago Bridge and Iron Works. ... 15
Connelly Iron Sponge and Governor Co. 16
Connersville Blower Co. ... 23
Craig, Ridgway & Sons ... 14
Crane Co., Wm. M. ... 26
Cruse Engineering Co. ... 24
Cruse-Kemper Co. ... 5

Davis & Farnum Mfg. Co. ... 15
Deily & Fowler Mfg. Co. ... 15
Dickey & Co., C. H. ... 34
Didier-March Co. ... 7
Dixon Crucible Co., Jos. ... 31
Donaldson Iron Co. ... 13
Drakes, Limited ... 31
Dresser Mfg. Co., S. R. ... 20

Evens & Howard Firebrick Co. ... 12

Gardner, Jr., Co., James. ... 16
Gas Engineering Co. ... —
Gas Machinery Co. ... 4
Gautier & Co., J. H. ... 12
General Gas Light Co. ... 29
Gerould, C. L. ... 13
Griffin & Co., John J. ... —

Helme & McIlhenny ... 35
Hone Co., F. de P. ... 24
Humphrey Co. ... 26
Humphreys & Miller ... 24

Improved Equipment Co ... 13
Isbell-Porter Co. ... 8

Keller, C. M. ... 35
Kerr Murray Mfg. Co. ... 10
Keystone Meter Co. ... 34

Laclede-Christy Clay Products Co ... 12
Lea, Henry I. ... 25
Light, Geo. ... 12
Light, Heat and Power Corporation ... 19
Lloyd Construction Co. ... 14
Ludlow Valve Mfg. Co. ... 8

Marston, Glenn ... 24
Maurer & Son, H. ... 35
McDonald & Co., D. ... 33
Metric Metal Works. ... 36
Michigan Ammonia Works. ... 19
Miner, Thos. T. W. ... 26
Missouri Firebrick Co ... 13
Morris Iron Co. ... 27
Mueller Mfg. Co., H. ... 11

National Chamber Oven Co. ... 9
New York Improved Meter Co. ... 34
New York Lead Wool Co. ... 17
New York Rubber Co. ... 32

Parker-Russell Mining & Mfg. Co. ... 13
Parker & Co., C. D. ... 25
Pittsburgh Meter Co. ... 32
Pratt, E. G. ... 25

Quintard Iron Works. ... 24

Ramsdell, Geo. G. ... 25
Randolph, W. W. ... 25
Rathbone, Sard & Co. ... 29
Reynolds Gas Regulator Co. ... 16
Riter-Conley Mfg. Co. ... 1
Roots Co., P. H. & F. M. ... 17
Rotary Meter Co. ... 33

Safety Gas Main Stopper Co ... 12
South Chester Tube Co. ... 17
Sprague Meter Co. ... 33
Stacey Mfg. Co. ... —
Standard Meter Co. ... 34
Standard Oil Co ... —
Sullivan Bros. ... 25
Sun Street Light Co. ... 26
Thermal Motor Co. ... —

Tufts Meter Co., W. ... 34

United Gas Improvement Co. ... 2

Welsbach Co. ... 28
Welsbach Street Lighting Co. ... 28
Western Gas Construction Cd ... 36
Westmore and Coal Co. ... 6
Witherby Co., E. E. ... 25
Wood & Co., R. D ... 11

CLASSIFIED LIST OF ADVERTISMENTS.

Ammonia Concentrators.
Bartlett-Haywood Co.
Bredel Co., F.
Gas Machinery Co.
Michigan Ammonia Works.
Western Gas Construction Co.

Apparatus.
See Coal Gas Plants,
Conveyors,
Stoking Machinery,
Water Gas Plants.

Arc Lamps.
See Lamps.

Bags—Gas.
American Meter Co.
New York Rubber Co.
See also Stoppers.

Bankers.
Parker & Co., C. D.

Benches—Complete.
Baltimore Retort and Firebrick Co.
Bredel Co., F.
Didier-March Co.
Evens & Howard Firebrick Co.
Gardner, Jr., Co., James.
Gas Machinery Co.
Gautier & Co., J. H.
Improved Equipment Co.
Isbell-Porter Co.
Laclede-Christy Clay Products Co.
Missouri Firebrick Co.
National Chamber Oven Co.
Parker-Russell Mining and Mfg. Co.

Blast Furnaces.
American Gas Furnace Co.

Blowers.
See Exhausters.

Books.
American Gas Light Journal.

Burners, Fuel.
American Gas Furnace Co.

Burners, Lighting.
Crane Co., Wm. M.

By-Product Plants.
National Chamber Oven Co.

Calorimeters.
American Meter Co.

Carbonic Acid Extractors.
See Purifiers, Scrubbers.

Castings.
See Iron Work.
Pipe.

Cements.
Gerould, C. L.

Couplings.
Dresser Mfg. Co., S. R.

Charging Machinery.
Bredel Co., F.
Bronder, G. A.
Davis & Farnum Mfg. Co.
Isbell-Porter Co.
Kerr Murray Mfg. Co.
Stacey Mfg. Co.

Coals.
Berwind-White Coal Mining Co.
Westmoreland Coal Co.

Coal Gas Apparatus.
Bartlett-Hayward Co.
Bredel Co., F.
Drakes, Limited.
Gas Machinery Co.
Improved Equipment Co.
Riter-Conley Mfg. Co.
Stacey Mfg. Co.
United Gas Improvement Co.
Western Gas Construction Co.

Coal Handling Machinery.
Bronder, G. A.
Brown Hoisting Machinery Co.

Cocks—Lamp.
American Meter Co.
Crane Co., Wm. M.

Cocks—Meter and Service.
American Meter Co.
Mueller Mfg. Co., H.

Cookers.
See Ranges.

Coke Crushers.
Bartlett-Hayward Co.
Keller, C. M.

Condensers.
See Purifiers.

Conveyors.
Bartlett-Hayward Co.
Bredel Co., F.
Bronder, G. A.
Brown Hoisting Machine Co.
Davis & Farnum Mfg. Co.
Gas Machinery Co.
Kerr Murray Mfg. Co.
Stacey Mfg. Co.
Western Gas Construction Co.

Elevators.
Craig Ridgway & Sons.

Engineers—Consulting.
Baehr, W. A.
Byllesby & Co., H. M.
Hone Co., F. de P.
Humphreys & Miller.
Lea, Henry I.
Marston, Glenn.
Pratt, E. G.
Ramsdell, Geo. G.
Randolph, Wm. W.
Witherby Co., E. E.

Engineers—Contracting.
Bartlett-Hayward Co.
Bredel Co., F.
Bronder, G. A.
Cruse-Kemper Co.
Cruse Engineering Co.
Davis & Farnum Mfg. Co.
Didier-March Co.
Drakes, Limited.
Gas Engineering Co.
Gas Machinery Co.
Improved Equipment Co.
Isbell-Porter Co.
Kerr Murray Mfg. Co.
Light, Heat and Power Corporation.
National Chamber Oven Co.
Riter-Conley Mfg. Co.
Stacey Mfg. Co.
Sullivan Bros.
United Gas Improvement Co.
Western Gas Construction Co.

Enrichers.
See Oil.

Exhausters.
American Gas Furnace Co.
Connersville Blower Co.
Davis & Farnum Mfg. Co.
Gas Machinery Co.
Isbell-Porter Co.
Kerr Murray Mfg. Co.
Roots Co., P. H. & F. M.

Fans.
Thermal Motor Co.

Firebrick.
Baltimore Retort and Firebrick Co.
Didier-March Co.
Evens & Howard Firebrick Co.
Gardner, Jr. Co., James.
Gas Machinery Co.
Gautier & Co., J. H.
Laclede-Christy Clay Products Co.
Maurer & Son. H.
Missouri Firebrick Co.
Parker-Russell Mining and Mfg. Co.

Fittings.
See Pipe.

Fixtures.
Welsbach Co.

Furnaces—Gas.
American Gas Furnace Co.

Gauges.
American Meter Co.
Bristol Co.
Brown Instrument Co.
Connelly Iron Sponge & Governor Co.
Helme & McIlhenny.
McDonald & Co., D.

Governors.
Chaplin-Fulton Mfg. Co.
Connelly Iron Sponge and Governor Co.
Gas Machinery Co.
Isbell-Porter Co
Lloyd Construction Co.
Mueller Mfg. Co., H.
Pittsburgh Meter Co.
Reynolds Gas Regulator Co.

Heaters.
See Ranges.
Water Heaters.

Heating Machines.
American Gas Furnace Co.

High Pressure Goods.
American Gas Furnace Co.
Mueller Mfg. Co., H.

Holders.
Bartlett-Hayward Co.
Chicago Bridge and Iron Works.
Cruse-Kemper Co.
Davis & Farnum Mfg. Co.
Deily & Fowler Mfg. Co.
Kerr Murray Mfg. Co.
Riter-Conley Mfg. Co.
Stacey Mfg. Co.
Western Gas Construction Co.
Wood & Co., R. D.

Industrial Fuel Appliances.
See Fans.
Furnaces.

Iron Work.
Chicago Bridge & Iron Works.
Cruse-Kemper Co.
Gas Machinery Co.
Morris Iron Co.
Quintard Iron Works.
Riter-Conley Mfg. Co.
Stacey Mfg. Co.
Sun Street Light Co.
Wood & Co., R. D.

Instruments.
American Meter Co.
Bristol Co.
Brown Instrument Co.
Connelly Iron Sponge and Governor Co.

Lamps.
American Gas Light Co.
Crane Co., Wm. M.
General Gas Light Co.
Miner, Thos. T. W.
Welsbach Co.
Welsbach Street Lighting Co.

Lamp Posts.
Donaldson Iron Co.
General Gas Light Co.
Miner, Thos. T. W.
Morris Iron Co.
Sun Street Light Co.
Welsbach Street Lighting Co.
Wood & Co., R. D.

Lantern—Safety.
Connelly Iron Sponge and Governor Co
New York Lead Wool Co.

Machinery.
See Charging Machinery.
Coal Gas Apparatus.
Conveyors.
Water Gas Apparatus.

Mains.
Sullivan Bros.
See Also Pipe.

Mantles.
American Gas Light Co.
General Gas Light Co.
Welsbach Co.

Meters—Acetylene.
Keystone Meter Co.

Meters—Air.
Metric Metal Works.
United Gas Improvement Co.

Meter Connections.
Mueller Mfg. Co., H.

Meter Locks.
See Prepayment Meters.

Meters—Natural Gas.
Keystone Meter Co.
Metric Metal Works.
Pittsburg Meter Co.
Standard Meter Co.
Sprague Meter Co.

Meters—Prepayment.
American Meter Co.
Dickey & Co., C. H.
Griffin & Co., John J.
Helme & McIlhenny.
Keystone Meter Co.
McDonald & Co., D.
New York Improved Meter Co.
Sprague Meter Co.
Tufts Meter Co., N.

Meters—Proportional.
Metric Metal Works.
Pittsburg Meter Co.
Rotary Meter Co.

Meter Provers.
See Provers.

Meters—Regular.
American Meter Co.
Dickey & Co., C. H.
Griffin & Co., John J.
Helme & McIlhenny.
Keystone Meter Co.
Metric Metal Works.
McDonald & Co.
New York Improved Meter Co.
Pittsburg Meter Co.
Standard Meter Co.
Sprague Meter Co.
Tufts Meter Co., N.

Meters—Station.
American Meter Co.
Dickey & Co., C. H.
Griffin & Co., John J.
Helme & McIlhenny.
McDonald & Co., D.
Rotary Meter Co.
Standard Meter Co.
Tufts Meter Co., N.

Meters—Steam.
Gas Machinery Co.
United Gas Improvement Co.
Western Gas Construction Co.

Meters—Test.
American Meter Co.
Dickey & Co., C. H.
Standard Meter Co.

Meters—Water.
Pittsburg Meter Co.

Meters—Wet.
American Meter Co.
Helme & Mcilhenny.
Tufts Meter Co., N.

Oil.
Standard Oil Co.

Oil Tanks.
See Holders.

Outdoor Lighting Fixtures.
See Street Lamps.
Lamp Posts.

Patents.
Burnham, R. E.

Paints.
Atlas Paint Co.
Dixon Crucible Co., Jos.

Photometers.
American Meter Co.
Connelly Iron, Sponge and Governor Co.

Plants—Complete.
See Engineers—Contracting.

Pipe.
Davis & Farnum Mfg. Co.
Dresser Mfg. Co., S. R.
Donaldson Iron Co.
Kerr Murray Mfg. Co.
Quintard Iron Works.
Sullivan Bros.
Wood & Co., R. D.

Pipe—Wrought Iron.
South Chester Tube Co.

Pipe Cutting & Threading Mach.
Mueller Mfg. Co.

Pipe Laying.
Sullivan Bros.

Prepayment Meters.
See Meters.

Processes.
See Coal Gas Apparatus.
Water Gas Apparatus.

Producer Gas Plants.
Gas Machinery Co.
Improved Equipment Co.
Wood & Co., R. D.

Provers—Meter.
American Meter Co.
Dickey & Co., C. H.
Helme & Mcilhenny.
Metric Metal Works.
McDonald & Co., D.
Standard Meter Co.

Pumps—Drip.
American Meter Co.

Purifiers.
Bartlett-Hayward Co.
Bredel Co., F.
Cabot Mfg. Co.
Connelly Iron Sponge and Governor Co.
Cruse-Kemper Co.
Davis & Farnum Mfg. Co.
Gas Engineering Co.
Gas Machinery Co,
Isbell-Porter Co.
Kerr Murray Mfg. Co.
Lloyd Construction Co
Quintard Iron Works.
Stacey Mfg. Co.
United Gas Improvement Co.
Western Gas Construction Co.
Wood & Co., R. D.

Purifying Materials.
Connelly Iron Sponge and Governor Co.
Gas Machinery Co.
United Gas Improvement Co.

Purifier Trays.
Cabot Mfg. Co.
Lloyd Construction Co.

Pyrometers.
Bristol Co.
Brown Instrument Co.

Ranges—Gas.
Crane Co., Wm. M.
Rathbone, Sard & Co.

Regulators.
See Governors.

Retorts—Horizontal & Inclined.
Baltimore Retort and Fire Brick Co.
Didier-March Co.
Evens & Howard Firebrick Co.
Gardner, Jr., Co., James.
Gas Machinery Co.
Gautier & Co., J. H.
Laclede-Christy Clay Products Co.
Maurer & Son, H.
Missouri Fire Brick Co.
Parker-Russell Mining and Mfg. Co.

Retorts—Vertical.
Didier-March Co.
Gas Machinery Co.
Improved Equipment Co.
Laclede-Christy Clay Products Co.
Parker-Russell Mining and Mfg. Co.

Rubber Goods.
New York Rubber Co.
See also Bags.

Services.
Sullivan Bros.
See also Pipe.

Service Boxes.
Morris Iron Co.
Mueller Mfg. Co., H.

Service Cocks.
American Meter Co.
Mueller Mfg. Co., H.
See also Cocks.

Scrubbers.
See Purifiers.

Scrubber Trays.
See Purifier Trays.

Specials.
See Pipe.

Stoking Machinery.
See Charging Machinery.

Stocks and Dies.
Mueller Mfg. Co., H.

Stopppers—Gas Main.
Safety Gas Main Stopper Co.

Storage Tanks.
See Holders.

Stoves.
See Ranges.

Street Lamps.
Miner, Thos. T. W.
Welsbach Street Lighting Co.

Structural Iron Work.
See Iron Work.

Tapping Machines.
Light, Geo.
Mueller Mfg. Co., H.

Tar Extractors.
See Coal Gas Apparatus.
Water Gas Apparatus.

Thermometers.
American Meter Co.
Bristol Co.
Brown Instrument Co.
Gas Machinery Co.

Testing Apparatus.
See Instruments.

Tools.
Dresser Mfg. Co., S. R.
Light, Geo.
Mueller Mfg. Co., H.
Safety Gas Main Stopper Co.

Tubing.
See Rubber Goods.

Valves.
Bartlett-Hayward Co.
Davis & Farnum Mfg. Co.
Gas Machinery Co.
Isbell-Porter Co.
Kerr Murray Mfg. Co.
Ludlow Valve Mfg. Co.
Roots Co., P. H. and F. M.
Stacey Mfg. Co.
Western Gas Construction Co.
Wood & Co., R. D.

Vertical Retorts.
See Retorts.

Washers.
See Purifiers.

Water.
See Heaters.
Meters..
Pipe.

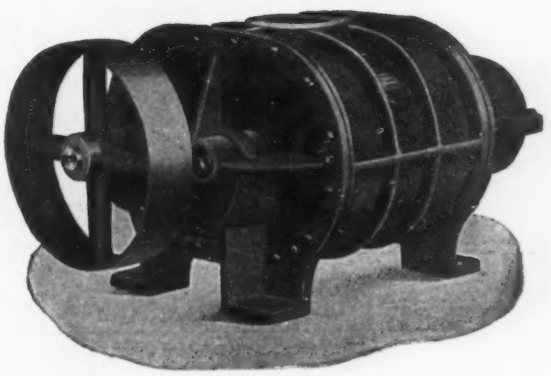
Water Gas Apparatus.
Bartlett-Hayward Co.
Gas Machinery Co.
Stacey Mfg. Co.
United Gas Improvement Co.
Western Gas Construction Co.

Water Heaters.
Humphrey Co.
Rathbone, Sard & Co.

Water Tanks.
See Holders.

USE CONNERSVILLE VICTOR BLOWERS

With Gas Blast Burners



For Annealling,
Tempering,
Brazing,
Welding,
Enamelling,
Soldering,
Forging,
Assaying,
Refining, Etc.

Ask for a temperature chart showing the melting, tempering and annealling points of different metals. IT'S FREE.

THE CONNERSVILLE BLOWER COMPANY,

Connersville, Indiana, U. S. A.

NEW YORK OFFICE, 114 Liberty Street. CHICAGO OFFICE, 536 Monadnock Building.

ALEX C. HUMPHREYS, President.
ALTEN S. MILLER, Vice-President.
EMILE GUILLAUDEAU, Treasurer.
ROBERT O. LUQUEER, Secretary.
HOWARD E. WHITE, General Counsel.

EUROPEAN CORRESPONDENTS,
HUMPHREYS & GLASGOW,
LONDON. —— BRUSSELS.

HUMPHREYS & MILLER,

SUCCESSORS TO

HUMPHREYS & GLASGOW, INC.,

CONSULTING ENGINEERS,

Designers of Gas and Electric Systems and Managers of Companies.

Reports on Artificial and Natural Gas and Electric Light and Power Properties.

Advice in Cases before Courts and Public Service Commissions.
Properties Purchased.

CITY INVESTIC BUILDING, 165 BROADWAY, - - - - - - - - - - - NEW YORK.

WILLIAM A. BAEHR,

CONSULTING ENGINEER,

PEOPLES GAS BUILDING, CHICAGO.

Also Representing The Bartlett Hayward Company.

CABLE ADDRESS: WILDOLPH, NEW YORK.

WILLIAM W. RANDOLPH, M.E.,

CONSULTING ENGINEER,

FORMERLY CHIEF ENGINEER AND VICE-PRESIDENT OF HUMPHREYS & GLASGOW, INC.

EXAMINATION AND VALUATION OF PUBLIC UTILITY AND POWER CORPORATIONS.
ADVICE AS TO CONSTRUCTION AND MANAGEMENT.

165 BROADWAY, NEW YORK CITY.

CRUSE ENGINEERING COMPANY,

CROZER BUILDING, - - - 1420 CHESTNUT ST., PHILADELPHIA, PA.

GAS HOLDERS, PURIFIERS, CONDENSERS, SCRUBBERS.

GENERAL PLATE METAL AND STRUCTURAL WORK.

ARTHUR R. CRUSE.

PATENTS---TRADE MARKS---COPYRIGHTS.
ROYAL E. BURNHAM,
Solicitor of Patents and Counsellor in Patent Causes.
833 Bond Building, Washington, D. C.
Send for Pamphlet on Patents.

QUINTARD IRON WORKS CO.,
Foot of Twelfth Street and East River, New York City.
BENCH WORK, CONDENSERS, SHAVING SCRUBBERS, CAST IRON FLANGED PIPE, RIVETED STEEL PIPE.
FRRDERICK W. FLOYD, Engineer.

FREDERIC DE P. HONE & CO.,
ENGINEERS,
1 Liberty St., New York City.
INSPECTION OF MATERIALS AND WORKMANSHIP AT THE MILLS, SHOPS, FOUNDRIES, AND ERECTION OF HOLDERS AND OTHER STRUCTURES AND APPARATUS.
Reports and Consultations.

GLENN MARSTON,
NEW YORK CITY.
MUNICIPAL STATISTICS.
Information for New Business and Commercial and Municipal Ownership Campaigns.
CIVIC AND BUSINESS MEN'S ORGANIZATIONS PERFECTED

PRACTICAL HANDBOOK ON GAS ENGINES, WITH INSTRUCTIONS FOR CARE AND WORKING OF THE SAME,
By G. LIECKFELD, C.E. Translated with Permission of the Author, by GEORGE M. RICHMOND, M.E. Price, $1
For Sale by AMERICAN GAS LIGHT JOURNAL, 42 Pine Street, New York City.

H. M. BYLLESBY & COMPANY
(INCORPORATED),
GAS ENGINEERS,
DESIGN, CONSTRUCT AND OPERATE
COMPLETE COAL, WATER AND CRUDE OIL GAS PLANTS.
EXAMINATIONS AND REPORTS.
218 LA SALLE STREET, CHICAGO.
Oklahoma City, Okla. Mobile, Ala. San Diego, Cal.

EDWARD G. PRATT,
Consulting and Managing Gas Engineer.
Examinations and Reports upon Gas and Electric Properties.
Advice as to Management and Development of Properties.
Properties Purchased.
627-629 Peoples Gas Bldg., Chicago.

E. E. WITHERBY CO.,
40 WALL STREET, NEW YORK,
ENGINEERS AND OPERATORS
GAS, ELECTRIC, WATER AND STREET R. R. PROPERTIES.
EXAMINATIONS AND REPORTS. PROPERTIES PURCHASED.

HENRY I. LEA
CONSULTING GAS ENGINEER
PEOPLES GAS BUILDING CHICAGO

HIGH PRESSURE WORK.
We have made a specialty of laying mains for high pressure distribution for GAS COMPANIES.
Advise us of your proposed extensions. Estimates furnished.
SULLIVAN BROTHERS,
45 MAIN STREET,
FLUSHING, N. Y.

We are always in the market to underwrite parts or entire issues of bonds or stock of established gas and electric light companies.
C. D. PARKER & CO., BANKERS,
78 Devonshire St., Boston, Mass.

GEORGE G. RAMSDELL,
CONSULTING ENGINEER,
254 WEST 89TH STREET,
NEW YORK CITY

SEE SPECIAL SUBSCRIPTION OFFER, PAGE 3 OF ADVERTISEMENTS.

BRAY BURNERS HAVE BEEN USED FOR MORE THAN FORTY YEARS.

In that time they have been recommended and used by the leading gas experts, endorsed by the U. S. Government Inspectors of Gas, as well prominent State Inspectors.

To-day the Bray is the only high-grade, absolutely reliable open flame burner on the market.

W. M. CRANE COMPANY,

16, 18 and 20 West 32d Street, New York,

SOLE AGENTS FOR GEO. BRAY & CO., LEEDS, ENGLAND.

PACIFIC COAST DISTRIBUTORS: Northwest Gas Equipment Company, Portland, Oregon.

"THE GREAT GAS WHITE WAY"

Patented April 25, 1911

The latest, most effective and most economical, method of street lighting, with the most attractive and ornamental fixtures, is with the

"SUN" GASOLABRA

The "Sun" Gasolabra is used with either artificial, or natural gas. The lamps are made with one, two, three, four or five lights and with single or double burners. The five-way lamp, with double burners, will give about 750 C. P. (actual) to a standard on artificial, and 1,000 C. P. (actual) on natural gas.

Light Up the Front of Your Store or Office

WITH

"SUN" GASOLABRA

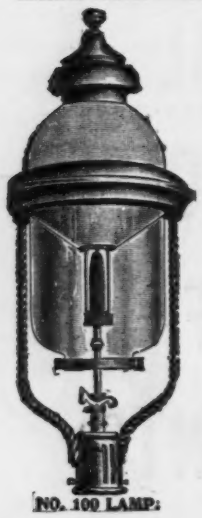
And Start a "Great Gas White Way"

Write for illustrated folder, and address of nearest agent, to

THE SUN STREET LIGHT COMPANY,

1176 Market Street, Canton, Ohio, U. S. A.

Patented April 25, 1911



NO. 100 LAMP.

"THE MINER"

GLOBE STREET LAMPS.

OVER FORTY YEARS IN USE THE WORLD OVER.

THE BEST STREET LAMPS

for

ALL KINDS OF GAS OR BURNERS.

This is only one of a Large Variety of Styles.

SEND FOR CATALOGUE.

THOS. T. W. MINER,

821 and 823 Eagle Avenue, New York.

ORDER NOW

TO GET PROMPT SHIPMENT.

HUMPHREY AUTOMATIC GAS WATER HEATERS

Have the valve at the top; easy and cheap to connect; a sootless bunsen flash pilot; a galvanized, rust-proof, non-clogging burner, and many other things making for trouble freedom and high efficiency. ∴ ∴ ∴ ∴

GUARANTEED.

They Make Pleased Users.

HUMPHREY CO.,

Kalamazoo, Mich.

AMERICAN MINIATURES.

WE HAVE AIMED TO PLEASE

In designing AMERICAN MINIATURES.

They are built attractively and finished in dainty white enamel.

Clean--- Small ---Artistic --- Durable.

Perfectly noiseless in operation.

Gas is controlled by our patented regulator, same as used on our arc lamps.

Can be locked when correct adjustment is secured.

No. 10, with By-Pass.

THERE IS NO LIMIT

To what you can do with AMERICAN MINIATURES.

They will attach to any fixture--old or new--upright or inverted.

They can be used in living-rooms, halls, dining-rooms, kitchens, bed and bath-rooms, basements, attics, offices, stores, etc.

They are wonderful Light Givers.

No. 15.

ANY standard single-burner glassware can be used---open or closed globes---plain or fancy shades. You are not confined to any particular style.

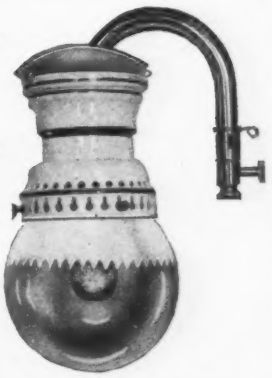
Closed globe can be used without inner glass cylinder.

Every part is made of best material obtainable and is thoroughly inspected and tested.

Packed in attractive cartons.

AGENTS WANTED.

Prices and full information on application.



No. 20.

AMERICAN GAS LIGHT COMPANY,

KALAMAZOO, MICHIGAN.

DESIGN 37705.

The Demand for

MORE LIGHT

Is Fulfilled with our

4-LIGHT POSTS.

Over 3,000 Candle Power.

SEND FOR BULLETIN 20.

THE MORRIS IRON COMPANY,

"THE OUTDOOR LIGHTING SPECIALTY HOUSE,"

91 West Street, - - - New York City.

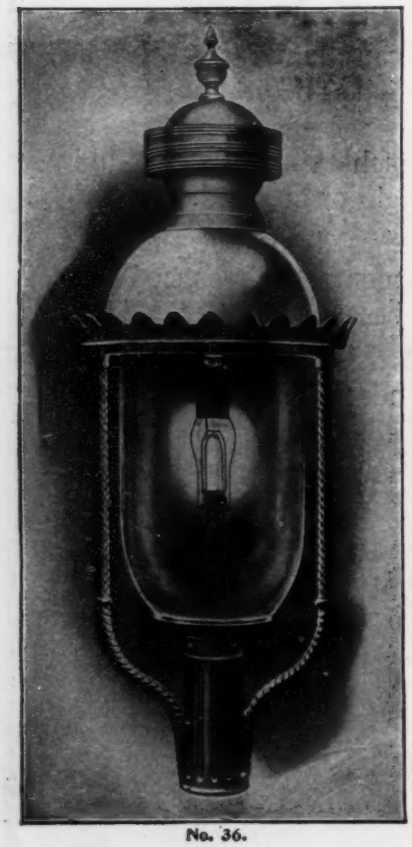
PUBLIC LIGHTING TABLE FOR JULY, 1911.

[COMMUNICATED BY THE AMERICAN METER COMPANY.]

Day of Week.	MOONLIGHT SCHEDULE.		
	Date.	Light.	Extinguish.
Saturday	1	10.30 P.M.	3.30 A.M.
Sunday	2	10.50 F.Q.	3.40
Monday	3	11.10	3.40
Tuesday	4	11.30	3.40
Wednesday	5	12.00	3.40
Thursday	6	12.30 A.M.	3.40
Friday	7	1.00	3.40
Saturday	8	1.40	3.40
Sunday	9	2.20	3.40
Monday	10	No L.	No L.
Tuesday	11	No L. F.M.	No L.
Wednesday	12	No L.	No L.
Thursday	13	8.00 P.M.	10.20 P.M.
Friday	14	8.00	10.50
Saturday	15	8.00	11.10
Sunday	16	8.00	11.30
Monday	17	8.00	12.00
Tuesday	18	8.00 L.Q.	12.20 A.M.
Wednesday	19	8.00	12.50
Thursday	20	8.00	1.20
Friday	21	8.00	2.00
Saturday	22	8.00	3.50
Sunday	23	7.50	3.50
Monday	24	7.50	3.50
Tuesday	25	7.50 N.M.	3.50
Wednesday	26	7.50	3.50
Thursday	27	7.50	3.50
Friday	28	7.50	3.50
Saturday	29	7.50	3.50
Sunday	30	9.10	4.00
Monday	31	9.40	4.00

NEW YORK, 318 West 42d Street.
BOSTON, 820 Beacon Building.
PHILADELPHIA, Broad and Arch Streets.
ST. LOUIS, 712 Roe Building.
CHICAGO, 218 La Salle Street.
SAN FRANCISCO, 512 Oak Street.

WELSBACH STREET LIGHTING COMPANY



No. 36.

....OF AMERICA....

Controls and Operates the **Welsbach System of Street Lighting,**

Which includes its specially DESIGNED and PATENTED BURNER for PARK LIGHTING exclusively.

Uniformly SUCCESSFUL in 150 Cities and Towns.

By means of the Welsbach System of street lighting the superiority of GAS over electricity for street lighting has been fully demonstrated.

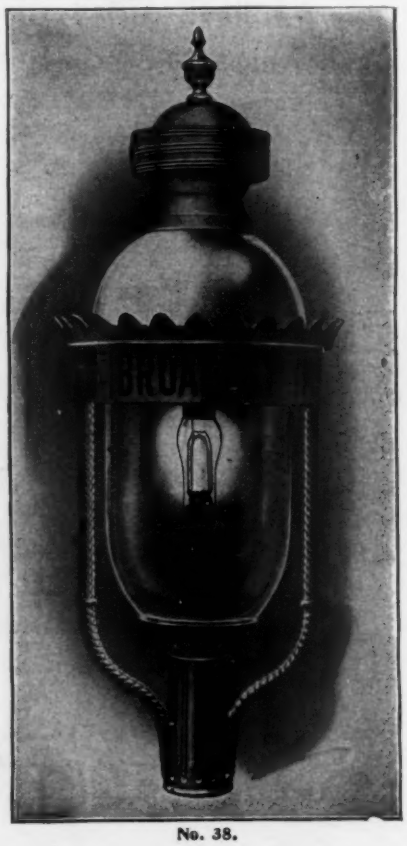
POINTS OF MERIT:

It is { Economical, Attractive, Successful, Up-to-date.

IT LIGHTS THE STREET.

Where there are no gas mains we can furnish an equally good light by our SELF-GENERATING NAPHTHA WELSBACH BURNER, and thereby supply a uniform light in all localities.

Correspondence Solicited from Gas Companies and Others interested in Municipal and Outside Lighting.



No. 38.

STANDS FOR GENUINE Welsbach OUR TRADE MARK ON EVERY BOX

STANDS FOR GENUINE Welsbach OUR TRADE MARK ON EVERY BOX

Gas Plus.

¶ Gas is undoubtedly the **cheapest** illuminant.

¶ Gas lighting and gas cooking appeal to the consumer because they save his money.

¶ But an appeal based solely on cheapness is a weak appeal. The clerk of to-day becomes the manager of to-morrow, and what is good enough for the clerk is not always good enough for the manager.

¶ Gas is cheapest.

¶ Gas **plus service** is **best** as well as cheapest.

¶ Welsbach equipment enables the progressive gas company successfully to overcome every possible form of competition, and to offer the consumer an illumination service that is quite without an equal, either in quality or economy.

Welsbach Company

Factories:
Gloucester, N. J. —— Columbus, O.

Humphrey Inverteds

FOR GOODS THAT STAND THE LIGHT.

Groceries and Meat Markets.—In these days of "Pure Food" agitation nothing speaks better for the stock than that it will stand plenty of light. Dingy corners are always regarded as dirty corners, and, on the other hand, a brilliantly lighted store is apt to be regarded as a cleanly store. Humphrey Inverted Arcs will create a sentiment in favor of gas that will pay you handsomely.

HUMPHREY MANTLES BEST FOR MAINTENANCE.

GENERAL GAS LIGHT CO.,

Kalamazoo. New York. San Francisco.

BINDER

FOR THE

JOURNAL.

PRICE, $1.

FOR SALE BY

A. M. CALLENDER & CO., - 42 Pine St., New York.

EVERYTHING IN A NUTSHELL.

THIS, SO TO SPEAK, DESCRIBES THE

"BABY GRAND" ACORN GAS RANGE

Two large ovens, one 20 x 18 x 12, and an u usu..lly large broiler, all in one range, taking up only 42 inches Floor Space. Your customers are going to demand this range. Can you supply the demand? ORDER A SAMPLE NOW.

WRITE FOR SPECIAL BULLETIN

RATHBONE, SARD & CO.

"The Oldest American Stove Makers"

ALBANY, N. Y. - DETROIT, MICH. - AURORA, ILL.

BOOKS FOR GAS MEN.

LECTURES ON ILLUMINATING ENGINEERING, delivered at Johns Hopkins University, 1910. 2 vols. Price, both, $5.

MODERN POWER GAS PRODUCER, by Horace Allen. Price, $2.50.

CHEMISTRY OF COKE, by W. C. Anderson. 194 pages. Price, $2.

AMMONIA & AMMONIUM COMPOUNDS by Dr! R. Arnold. 120 pages. Price, $2.

CALORIMETRY, by F. H. Bates. Price, $1.

GAS ANALYSIS, by W. H. Birchmore. 72 pages. Price, $1.25.

PRACTICAL TREATISE ON HEAT, by Thos. Box. Price, $5.

GOOD ENGINEERING LITERATURE, by Harwood Frost, M.E. 404 pages. Price, $1

COKE, by John Fulton, Price, $5.

HANDBOOK OF COST DATA FOR CONTRACTORS AND ENGINEERS, by H. P. Gillette. Price, $4.

TREATISE ON COMPARITIVE COMMERCIAL VALUES OF GAS COALS AND CANNELS, by D. A. Graham. Price, $1.50

METHODS OF GAS ANALYSIS, by Dr. W. Hempel. 480 pages. Price, $2.25.

LIQUID FUEL FOR MECHANICAL AND INDUSTRIAL PURPOSES, by E. A. B. Hodgetts. Price, $2.50.

GAS ENGINEERS' LABORATORY HANDBOOK, by John Hornby. Price, $2.50.

HIGH EFFICIENCY ELECTRICAL ILLUMINANTS AND ILLUMINATION, by R. W. Hutchinson, Jr. Price, $2.50,

GAS ENGINE, by F. R. Hutton. 543 pages. Price, $5.

MECHANICAL ENGINEERS' POCKET-BOOK, by Wm. Kent. Price, $5.

STEAM BOILER ECONOMY, by Wm. Kent. Price, $4.

AMERICAN PRODUCER GAS PRACTICE, by Nisbet Latta. 540 pages. Price, $6.

FACTS ABOUT PEAT, by T. H. Leavitt. Price, $1.

PRACTICAL HANDBOOK ON GAS ENGINES, by G. Lieckfeld, Price, $1.

GAS ENGINE DESIGN, by Chas. E. Lucke, Ph.D. Price, $3.

STANDARD REDUCTION FACTORS FOR GASES, by H. B. MacFarland, M.M.E. Price, $1.50.

GAS ENGINES AND PRODUCER GAS PLANTS, by R. E. Mathot. Price, $2.50.

AMERICAN COALS, by —— Nicholls. Price, $2.50.

ELECTRIC GAS LIGHTING, by H. S. Norrie. Price, 50 cents.

GAS ENGINEERS' POCKET-BOOK, by Henry O'Connor. Price, $3.50.

CALORIFIC POWER OF FUELS, by Herman Poole. Price, $3.

PRINCIPLES OF SCIENTIFIC MANAGEMENT, by F. W. Townsend. Price, $1.50.

CIVIL ENGINEERS' POCKET-BOOK, by J. C. Trautwine. Price, $5.

DISTRIBUTION by STEEL, by Henry Woodall and B. R. Parkinson. Price, $2.50.

ALCOHOL—ITS MANUFACTURE & DENATURING, by F. B. Wright. Price. $1.

ENGINEERING CHEMISTRY, by T. B. Stillman. Price, $4 50.

SYSTEMATIC HANDBOOK OF VOLUMETRIC ANALYSIS, by —— Sutton. Price, $5.

CHEMISTRY OF GAS MANUFACTURE, by Harold M. Royle, F.C.S. Price, $4.50.

MODERN COKING PRACTICE, by T. H. Byrom and J. E. Christopher. 168 pages. Illustrated. Price, $3.50.

HEAT ENERGY AND FUELS, by Oskar Nagel. 306 pages and 118 illustrations. Price, $3.

PRODUCER GAS AND GAS PRODUCERS, by Samuel S. Wyer. 295 pages. Price, $4.

GAS MANUFACTURE FOR STUDENTS, by John Hornby. Price, $2.50.

COAL TAR AND AMMONIA, by George Lunge. Price, $15.

GAS ANALYST'S MANUAL, by Jacques Abady. Price, $6.50.

SELF-INSTRUCTION FOR STUDENTS, Elementary, Advanced, Constructional. Price, each, $1.50.

GAS PIPING AND GAS LIGHTING, by W. P. Gerhard. 310 pages. Price, $3.

GAS POWER, by F. E. Junge, M.A., C.E., M.E. 548 pages. Price, $5.

GAS, GASOLINE AND OIL ENGINES, Including Producer Gas Plants, by Gardner D. Hiscox, M.E. Price, $2.50.

AMERICAN GAS LIGHT JOURNAL, - 42 Pine St., New York City.

IT IS ABSOLUTELY NECESSARY

that people be reminded continually that you are ready to sell them the things they want. This is a big world, with lots of people in it, and you are easily forgotten if you don't keep buyers posted. What you should do is to tell them about your product to-day, remind them to-morrow, and keep on reminding them thereafter. If you do this, when the buyer is ready to place his order he will remember you. :: :: :: :: :: :: :: :: :: ::

An Advertisement in the AMERICAN GAS LIGHT JOURNAL

is the best and surest means of keeping your name and product before the buyers. :: ::

GAS FURNACES AND HEATING MACHINES

No. 54 Heating Machine.

This MACHINE recommended for ANNEALING or HARDENING NEEDLES, STEEL PINS and similar work.

"Heating Machines" are Furnaces provided with carriers or propelling machinery for the Continuous Transmission of Work through heated space, for Annealing, Brazing, Hardening and Tempering Quantities.

FOR

INDUSTRIAL PURPOSES.

A MOST PROFITABLE DEPARTMENT FOR GAS COMPANIES.

WHAT WE MANUFACTURE:

Pressure Blowers, Heating Machines,
Gas Blast Furnaces, Blow Pipes and Burners.

STATE

AMOUNT - } OF WORK
SIZE - - } to be done in
KIND - - } given time.

AMERICAN GAS FURNACE COMPANY,

24 John St., New York, N. Y.

CATALOGUE SENT on APPLICATION.

JOHN CABOT, President.

TRAYS FOR Cabot Mfg Company GAS WORKS.

GEO. D. CABOT Secretary.

1412-1428 Adams St., Hoboken, N. J.

PURIFIER AND SCRUBBER TRAYS.

Church's Patent Trays,

Reversible; Strongest; Most Easily Repaired.

We also Supply the Cheapest and Strongest

Reversible Bolted Trays.

Special Trays for Iron Oxide in Either Style.

Dixon's Pipe Joint Compound
AND
Dixon's Silica Graphite Paint
ARE OF
GREAT VALUE
TO
GAS COMPANIES.

MAY WE TELL YOU ABOUT THEM?

JOSEPH DIXON CRUCIBLE COMPANY,
JERSEY CITY, N. J.

DRAKES
LIMITED,
HALIFAX, ENGLAND.

GAS ENGINEERS AND CONTRACTORS.

METRIC METAL WORKS,

MANUFACTURERS OF DRY GAS METERS.

EXTRA HEAVY TIN METERS AND IRON-CASE METERS

FOR ARTIFICIAL OR NATURAL GAS.

TOBEY CAST IRON NATURAL GAS METERS—METER PROVERS.

WESTCOTT PROPORTIONAL METERS FOR GAS OR AIR.

Special Attention Given to Repairing Meters of All Makes.

FACTORY—**ERIE, PA.** WAREHOUSE—**KANSAS CITY, MO.**

IRONCLAD

THE 100% METER

Cast Iron, Dry

Gas Meters

Either Straight or Circular Reading Registers

Will do all that tin meters will do, but will not rust.

The connection screws cannot be pulled away by the service pipe connections.

They are just as sensitive and have as large capacity with a given drop of pressure.

In short, Ironclad Meters are superior to all other meters now on the market, none excepted.

Ask for Catalog No. 100

We make Positive and Proportional Gas Meters for any pressure.
Also Tin Meters and Meter Provers.

Pittsburg Meter Co.

Main Office and Works:
EAST PITTSBURG, PA.

New York, 149 Broadway
Chicago, 337 W. Madison Street
Kansas City, 6 West 10th Street
Columbia, S. C., 1230 Washington Street
Seattle, 8th and Madison Streets
San Francisco, 149 New Montgomery Street

THE NEW MODEL PREPAYMENT METER.

SEND FOR SAMPLE METER AND LET US SHOW YOU THE NEW IMPROVEMENTS.

NEW YORK IMPROVED METER CO.,

306-310 EAST 47TH ST., NEW YORK CITY.

RUBBER GOODS

For Gas and Electric Plants.

NEW YORK RUBBER COMPANY,

Incorporated 1851.

FACTORIES:
MATTEAWAN, N. Y.

MAIN OFFICES: 84 and 86 Reade St., New York City.

D. McDONALD & CO.,

971-997 BROADWAY, ALBANY, N. Y.,

MANUFACTURERS OF

DRY GAS METERS, STATION METERS, PREPAYMENT METERS, METER PROVERS AND GAUGES.

THE GLOVER PREPAYMENT METER,

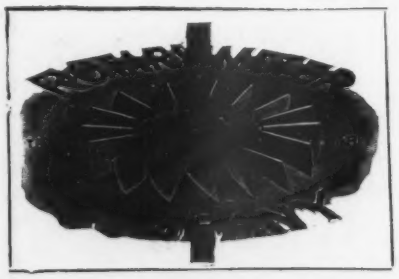
Simple, Strong, Satisfactory.

THE HINMAN STATION METER DRUM,

The greatest advance that has been made in 20 years in the ACCURATE and ECONOMICAL measurement of gas in large quantities. :: :: ::

NEW YORK OFFICE: 561 West 47th Street. | ALBANY OFFICE: 991 Broadway. | CHICAGO OFFICE: Jefferson and Monroe Streets.

We can meet your requirements for STATION METERS



On all capacities from 1,500 to 500,000 cu. ft. per hour.

One-half the Cost—One-tenth the Space of Old Style Wet Meters.

When in Need of Station Meters Write

ROTARY METER COMPANY,

280 Broadway, NEW YORK.

Our Literature and all information will be sent on request.

The Sprague Meter Co.

Manufacturers of

Cast Iron Gas Meters

for

Artificial or Natural Gas

Plain or Prepayment

Lower in first cost and cheaper to maintain than any meter on the market.

Write us for particulars.

The Sprague Meter Company

203 Water St., Bridgeport, Conn.

NATHANIEL TUFTS METER COMPANY,

455 Commercial St., Boston, Mass.

PREPAYMENT GAS METERS,
WET AND DRY GAS METERS, STATION METERS, ETC.

REPAIRING OF ALL MAKES OF METERS, AND FITTED WITH OUR PREPAYMENT ATTACHMENT.

"B" METERS "B"

INCREASED CAPACITY. INCREASED EFFICIENCY.

THE MARYLAND METER

PREPAYMENT METERS STATION METERS, METER PROVERS Etc.

PROMPT AND CAREFUL ATTENTION TO ALL REPAIR WORK

CHARLES H. DICKEY & COMPANY.

BALTIMORE. — CHICAGO.

YOU NEED ONE OR MORE OF OUR COMPLAINT METERS!!

METERS, Plain and Prepayment,

For Artificial or Natural Gas.

Repairing All Makes and Attachments Added if Desired.

SPECIAL METERS FOR ACETYLENE.

KEYSTONE METER COMPANY,

ROYERSFORD, PA.

EDWARD H. RODGERS, President. FREDK. C. VINEY, Vice-President and Superintendent. JOHN H. BLYE, Secretary and Treasurer.

The Standard Meter Co.

(INCORPORATED),

MANUFACTURERS OF

Natural and Artificial Gas Meters, also Station Meters, Provers, Portable Test Meters, and all other appliances

The Pioneers of Large Capacity Meters for Natural and Artificial Gas.

Office and Factory: 3112-14-16-18-20 North 17th Street, Philadelphia, Pa.

SOLE AGENTS FOR THE MIDDLE WEST:
The National Supply Co. of Kansas, Independence, Kas.

PACIFIC COAST REPRESENTATIVE:
The W. F. Boardman Co., 718 Mission St., San Francisco, Cal.

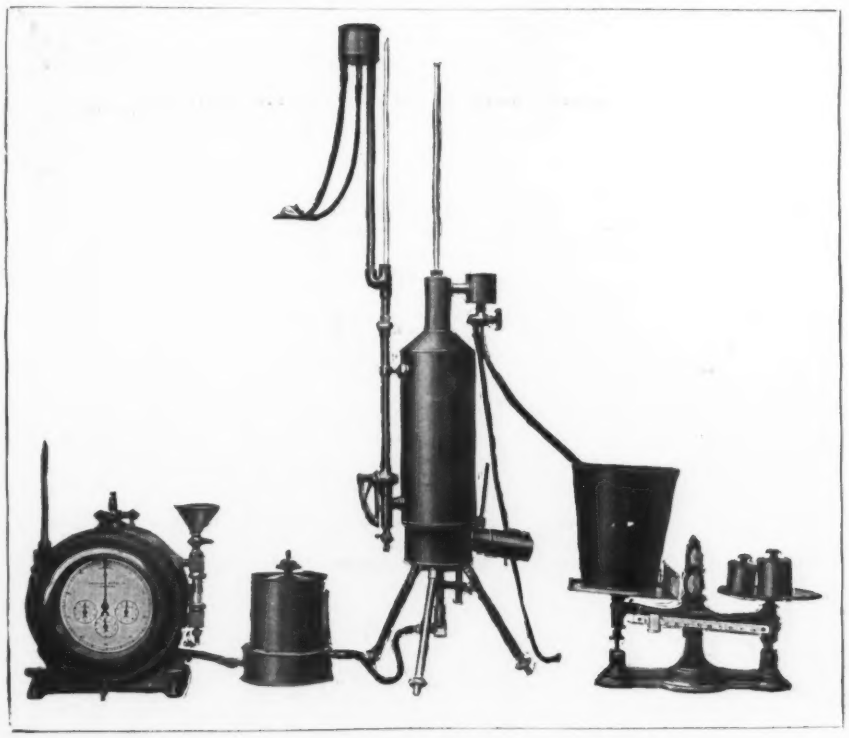
NEW YORK. PHILADELPHIA. CHICAGO.

THE AMERICAN METER CO.

ESTABLISHED 1884.

"WE AIM TO PLEASE."

WET and DRY GAS METERS,



Experimental and Station Meters, Pressure Gauges, Meter Provers, Drip Pumps, Service Cleaner Pumps, Service and Meter Cocks, Lamp Cocks and Torches, Photometrical Apparatus and all articles for the distribution, measurement and testing of gas.

WE WERE THE ORIGINATORS AND FIRST MANUFACTURERS OF THE PRESENT TYPE OF OPEN TOP METERS.

CIRCULARS AND PRICE LIST ON APPLICATION.

Sole Manufacturer of the

"JUNKERS-HINMAN" CALORIMETER.

This apparatus is of the same general design and operates on the same principle as the well-known Junkers Calorimeter, which has heretofore been regarded by gas experts as the most satisfactory form of calorimeter in use.

We have, however, made some valuable improvements in the instrument, with a view to overcoming certain troublesome features in the original, making it easier to operate, and we find these improvements very acceptable to users of the calorimeter.

This Calorimeter, with its accessories, is constructed in accordance with the recommendations made by the Committee on Calorimeters of the American Gas Institute. It also has the approval of the Public Service Commission of the Second District, Albany, and has been found by them to give accurate results.

NEW YORK,, 11TH AVE. AND 47TH ST.

HELME & McILHENNY,

Established 1848. **1339 to 1349 Cherry Street, Philadelphia, Pa.**

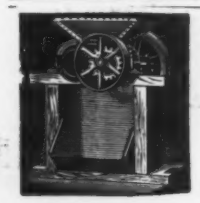
MANUFACTURERS OF

Wet and Dry Gas Meters, Station Meters, Provers, Gauges, Etc.

METERS REPAIRED

PREPAYMENT GAS METERS.

Our Own Patents. Strong. Simple. PROMPT ATTENTION CORRESPONDENCE SOLICITED.



KELLER ADJUSTABLE COKE CRUSHER

Strong, Simple, Durable. Will Crush any Size Desired.

C. M. KELLER

Columbus, Ind.

Correspondence Solicited.

ESTABLISHED 1856.

HENRY MAURER & SON,

Manufacturers of

High Grade Firebrick, Blocks, Tiles,

ETC.,

Works: Maurer, N. J. Office: 420 E. 23d St., N. Y. City.

FIELD'S ANALYSIS FOR THE YEAR 1910.

An Analysis of the Principal Gas Undertakings in England, Scotland and Ireland; being the 42d year of publication. Compiled and arranged by JOHN W. FIELD, Sec'y and Gen. Mgr. of The Gas Light and Coke Company, London. Price, $5. For Sale by AMERICAN GAS LIGHT JOURNAL, 42 Pine St., N. Y. City.

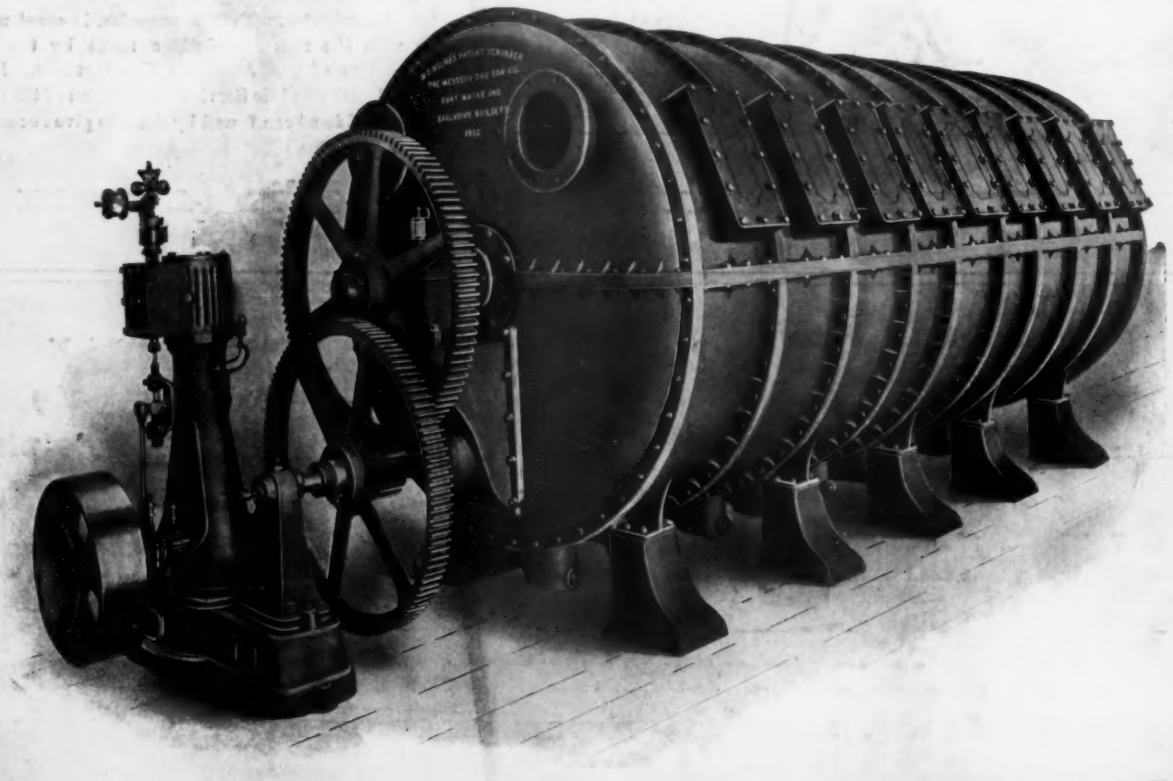
THE WESTERN GAS CONSTRUCTION COMPANY
WORKS AND MAIN OFFICE FORT WAYNE IND U S A
GAS ENGINEERS
EASTERN OFFICE NEW YORK CITY. WESTERN OFFICE SAN FRANCISCO.
Broad Exchange Building. 901 Indiana Street.

FOR THOROUGH AND EFFICIENT SCRUBBING
AND HIGH STRENGTH OF LIQUOR, THE

"HOLMES PATENT" ROTARY SCRUBBER

HAS NO EQUAL. WE WANT YOU TO APPRECIATE THE FEATURES THAT HAVE MADE IT A WINNER, BUT THIS SPACE WOULD NOT DO IT JUSTICE.

Bulletin 202-A is yours for the asking.



CONTRACTORS AND BUILDERS
EVERYTHING FOR A GAS PLANT

LE Mr '12